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Science-fiction

MARCH 1944

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THE OUTPOST
OF NEW SCIENCE
AND IMAGINATION

THE CONTRACT

BY E. MAYNE HILL

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CONTENTS

MARCH, 1944

VOL. XXXIII, NO. 1

NOVELETTES

THE CONTRACT, by H. Marne Hull	7
CIRCLE OF CONFUSION, by Wesley Long	45
THE CHILDREN'S HOUR, by Lawrence O'Donnell	86
DEADLINE, by Cleve Cartmill	154

SHORT STORIES

THE RULERS, by A. H. van Vogt	27
CONTROLLER, by Eric Frank Russell	66

ARTICLE

THE VANISHING YANKEE, by George O. Smith	103
--	-----

READERS' DEPARTMENT

THE EDITOR'S PAGE	5
IN TIMES TO COME	41
THE ANALYTICAL LABORATORY	116
BRASS TACKS	147

COVER BY TIMMINS

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JOHN W. CAMPBELL, JR.

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Meters

In this issue we carry an article by George O. Smith describing in general terms the instruments necessary to set up and align a simple, very ordinary modern radio receiver. Those complex gadgets are necessary for a common broadcast receiver, working on the frequency band centering at about one million cycles per second, a region originally selected because it was easy to work with.

The War Emergency Radio Service, a civilian emergency communication network maintained by civilian radio amateurs at their own expense and with their own efforts and materials, uses a band of frequencies just about one hundred times as high as the higher portion of the broadcast band. Amateurs have for several years worked with frequencies over two hundred fifty million cycles per second, and experimented above five hundred million.

At the comparatively low frequency of the WERS bands—around one hundred megacycles—it becomes almost impossible to attach any instrument to the circuit being tested; in the five hundred megacycle region it is out of the question. The reason is simple enough: at broadcast frequencies, large condensers and inductances are used, and adding the slight capacitance of a meter-connection somewhere on the circuit causes almost no interference. The meter

can correctly read the normal operation of the circuit. At the five hundred megacycle frequency, the capacitance of the shortest possible lead-wires, and the inductance of a straight, short metal tube are the whole inductance-capacitance loading of the tuned circuit. Not only is it impossible to attach a meter without completely changing conditions, the mere presence of extraneous material in the near neighborhood throws the whole circuit out of adjustment.

Metering methods have been developed. If you can figure out what not to do, and why not to do it, you may eventually know how to do it. Then, of course, the problem ceases to be a laboratory baby and becomes a production problem.

That basic problem of metering is by no means exclusive in the ultra-high frequency radio field; it shows up there now simply because radio technology is getting things down to the more delicate details. It's the same problem, essentially, that atomic physics long since encountered, and reduced to a mathematical equation—Heisenberg's Uncertainty Principle.

Whenever you work measure with very small, very delicate quantities, you must expect your metering method to disturb the value being measured. The smaller the absolute value being measured, the more acute the problem becomes. Opti-

cal science hit the limit in microscopy, and the electron microscope took over, using a finer-grained metering method. But the electron microscope has an absolute limit; it winds up with the Heisenberg Uncertainty—the ultimate limit of measurement—as its end. You cannot study the structure of an organic protein molecule with the electron microscope, because to get the required degree of resolution, electrons of high velocity are needed—and high-velocity electrons will give an effect similar to an effort to study the shape of an exquisite crystal goblet by the ricochet of a stream of .50 caliber machine-gun slugs.

Many of the fundamental research problems lie in that single field of metering; most of the technological research problems are essentially the same, but it is then evolved to a problem of control—making the metering method operate apparatus controlling the process being metered. The automatic pilot is no more than a metering problem developed from the stage of know-how-not to the production job of know-how.

The failure of the early steam automobiles to win popularity was due as much to the lack of adequate self-metering-controlling mechanisms as anything else. State laws required that the driver of a steam-powered automobile have a regular steam engineer's license—with considerable reason. The type of boiler used in those cars stored energy enough to blow the machine into shrapnel if improperly handled.

The success of the modern home oil-heating furnace is based on the development of good self-metering controls. A simple thing, the oil-burning furnace—but a darned good imitation of a robot in action! The type with a complete thermometric-time control involves these functions: recognition of the diurnal variation in human needs for heat, recognition of the temperature of the house, and in some types, of the rate of change in that temperature, and the ability to act properly to correct things according to the instructions given it. In addition, when it also heats water for the household, it has a separate sense-organ by which it is aware of the boiler-water temperature and keeps that at or above the point instructed. Any robot must be self-protecting—Asimov's third law of robotics, remember?—and the oil-furnace robot has sense-organs for that purpose. If the water-level in the boiler is too low, it stops until the supply is replenished. There are three to six other self-preservation senses and circuits—you can imagine what's needed, and find them on any home furnace.

Metering—control—makes the automatic furnace possible. It also makes Flying Fortresses, Whitehead Torpedoes, and the American gyro-stabilized tanks, that can fire accurately while on the move, possible.

Of course its nonsense to say we'll have robots some day.

The nonsense is the "some day."

THE EDITOR.



The Contract

by E. MAYNE HULL

Artur Blord had a contract to fill—and no machinery nor supplies to fill it. And there was a planetfull of mutated humans who had a contract of hatred for mankind to fill—and plenty of hate to fill it! One filled the contract—

Illustrated by Orban

The badge said: "Special Agent!"

Standing there in the racing elevator, Nadlin surreptitiously examined the emblem, then grinned in sheer delight. Life was sure good. Only three years out from Earth, and already he was in a position of power and importance in the Ridge Star space patrol.

He felt a brief, pitying contempt for all the lesser creatures of the universe. Let these fellows like Artur Blord make their money. He personally wouldn't exchange his own adventurous job for ten times the wealth he was about to confer on Blord.

The thought ended jerkily. With a start, Nadlin saw that the other

passenger in the elevator, a young man, was watching him with amusement. Nadlin flushed scarlet, in abrupt awareness that his examination of the badge and his private glee had been observed.

Ears burning, he turned his back. He found himself staring into a mirror inset in a panel. His image in the glass looked embarrassed. After a moment, Nadlin grinned wryly at the reflection. "You fatuous idiot," he thought. "Serves you right."

He expected the other to get off at a lower floor—surely, in a building with two hundred floors—but when the elevator finally slowed and stopped, the young man said in a pleasant voice:

"Hundred and ninetieth floor is as far as this machine goes, Nadlin. The elevator to the penthouse is just around the corner."

Nadlin faced about blankly. "You know me?"

The young man put out his hand. "My name's Blord. I was downstairs when they told me you wanted to see me, so I thought I'd ride up with you and look you over."

His smile was engaging, but not to Nadlin. Limply, the young policeman took the extended hand, felt his own shaken vigorously, and then released. He had a distinct and awful feeling that he would like to fall through the floor, even if it meant taking the one hundred ninety floors in reverse and at gravity speed.

"But see here," he babbled finally, "you can't be *the* Artur Blord. Why, he's the biggest operator in

the Ridge Stars; and you're no older than me. You—"

Gulping, Nadlin stopped himself. With an enormous effort, he pulled his staggered mind together, and then, with a strained quietness, said:

"Glad to meet you, Mr. Blord." He managed a grimace of a smile. "I hope you will pardon my astonishment. I was sent here by the chief of—"

"We can talk on our way up," Blord cut him off. "This way, please."

The only thing was, *he* didn't stop talking. It was a neat bit of conversation initiative snatching; and the smoothness of it was not lost on Nadlin. As they entered the second elevator, Blord was saying with a casual swiftness:

"When you were announced, I remembered somebody had told me the patrol considered itself indebted to me because of the . . . uh . . . assistance I rendered in driving the Skal thing out of the Ridge Stars a year ago. And, of course, they can't afford to be obligated to individuals. So when I remembered on top of that that someone had told me the police were going to blitz into the little known and still wide open and untamed group of stars known as the Eastern Ridge, and that to do this they would require a thousand space-drive units for patrol vessels now being secretly built, I put two and two together. This way, Nadlin."

Nadlin scarcely heard the admonition. He was aware that the

elevator had stopped. Quite automatically, he followed Blord into the hallway and across to a gleaming doorway.

His whole mind was concentrated on the bombshell words that Blord had tossed at him in a tone as natural and unassuming as a puff of cigarette smoke. Only this smoke was turning out to be poison gas, freighted with deadly implications.

The other's quick, pleasant voice did not pause for an instant:

"—And decided that the police were going to give me the order for the drives, and so get rid of their debt to me. Naturally, it wouldn't do at all to leave the police under obligation; so—"

He paused in the outer office. A young woman was busy there at a machine. She turned; Nadlin had a brief glimpse of a brilliant smile. The girl handed Blord a card. He glanced at it, then went through a second door into a larger office.

Bang! The door shut behind Nadlin; and he was alone with the dynamic young man, as Blord swung around, and finished:

"—So I accept the contract. What's the time limit on it, Nadlin?"

Nadlin said dully: "I'm supposed to make sure they're delivered in two months. You see—"

Realization came of what he was saying. He gasped to a halt, and stood there. His mind began to unflatten, and to peer groggily up again at the world. He found his voice in a final spasm of amazement:

"Good heavens, man! where did

you learn all that? *That's* secret information! Why, if certain people in those eastern stars found out about our intentions, they'd—"

A *brrr* from the desk eldophone ended his outburst. As Blord turned to face the plate, Nadlin drew back relieved that the interruption had occurred. He'd have time to organize himself.

The head and shoulders of a plump man appeared on the eldoplate. The very first sentence the man spoke drew Nadlin's entire fascinated attention:

"Listen, Artur, I got hold of Evee Calder about those space drives."

"Yes?" Blord's tone was questioning.

"She won't sell the ore. She warns us to stay away from Yelt VII."

Nadlin couldn't see Blord's face. But the man visibly stiffened. His voice came abruptly, harshly:

"The silly fool! So she's stacking herself up against any development of that primitive planet she lives on."

His tone grew cold, steely: "We accept the challenge. Send out the mining fleet with two thousand armed men. No provocation, mind you. Tell the men to stay at least a hundred miles away from Miss Calder's Lake Nem settlement, but to get nine hundred thousand tons of ore. Meanwhile, I'll go see her. That's all for now, Magrusson."

"One minute!" The plump individual spoke quickly. "Boss, don't act too shocked when you see the Calder woman. She's the worst

physical wreck you ever saw. She looks as if leeches have been draining her blood for years."

"O. K.!" Blord nodded with a curt indifference. He whirled on Nadlin. "If we've only got two months, there's no time to waste. Come this way."

Nadlin came, quite automatically. His mind was in the throes of trying to grasp what he had just heard. He was at the part where realization was striking hard that this man's corporation was already at work on his case. *His* case that he hadn't even presented as yet.

With a start, he saw that they had emerged onto a roof garden, and that a spaceship floated there. It was a long, slim, rakish-looking machine with the speed lines of a patrol vessel. The interior was that of a small luxury liner.

"I'll show you your room later," Blord was saying. "For the moment just grab one of those seats while we take off."

Almost, Nadlin echoed: "Take off!" Just in time, he stopped himself, and slumped into one of the indicated antigravity chairs. He sat there feeling like an atom clinging precariously to the outer rim of a tornado, in desperate danger of being shaken off.

The empty feeling faded, as the swift minutes passed. The first effects of the spaceship's initial velocity wore off. His brain untangled further, and there was time to observe his surroundings and to study his companion.

Artur Blord's back was to him. The famous young man sat in the control chair, intently watching the plates on the instrument board before him. Every few seconds he made minute adjustments on a series of shiny black directional dials. Finally he seemed satisfied.

He stood up, and came down from the dais on which the controls were located. Nadlin stared at him curiously, conscious that he was really seeing the man for the first time. Before, everything had been confused; now—

Artur Blord had a lean, distinctive countenance topped by dark, wavy hair, and its sensitivity accentuated by a firm chin and mouth. His face was—curiously in view of his Norwegian name—of markedly English origin.

The fine eyes smiled at Nadlin. Blord sank into a chair, and held out the card. "Study this," he said. "It will give you a clearer picture of my plans. Meanwhile, let me see your contract."

The exchange was made silently; and Nadlin examined his own share with genuine absorption. It read:

YELT VII

The operator on this sparsely habited planet is E. V. (Evee) Calder. She is the only woman operator I know of; and she has held her position by remaining a mysterious background figure. She is said to be quite youthful—in her thirties.

FIRST VALUE: Large deposits of the ore from which crystalline steel for space drives is made, located in hills and mountains all around Lake Nem.

SECOND VALUE: Exploitation should be interesting—if only because of woman operator.

Nadlin kept his gaze down, nonplussed. In the upper brackets of the police force, such open amorality as was suggested by the reference to the woman, was frowned upon. Three years of service discipline and morality had stamped that frown on Nadlin's character.

True, his chief had told him he might learn a great deal from Blord. And true, also, if the woman was really a physical wreck, she wouldn't be—interesting—but—

A melodic scream from the control board interrupted the sharp, disapproving thought. He watched alertly as Blord climbed the steps, and sank into the control chair.

The man spoke swiftly for several minutes in a very low voice. At last he looked around and beckoned Nadlin. The latter mounted gingerly to the dais. Blord began at once:

"My general manager, Mr. Magrussan, has opened a channel for us through the registered circuit. As you probably know, the circuit provides an automatic record of contracts being signed, and is completely secret, never seen by human eyes unless a court dispute arises. You have no objections to signing, I hope?"

For a moment, he hadn't. Under the pressure of that persuasive voice, he actually reached for the extended pen. Furious at himself, he drew back. He thought in a blaze of exasperation: wasn't he ever going to stop being a block of wood in his relations with this man? He held his voice steady, as he said:

"Just one or two questions first, Mr. Blord. I have heard of this debt which the police owe you; not in detail, but apparently it does exist. It makes the situation difficult. Should you for instance find yourself unable to deliver the goods within the specified time, the patrol is most unlikely to be harsh with you; and at the same time its own plans will be seriously disrupted.

"I have heard"—his voice deepened; he felt suddenly surer of his ground—"that the Ridge Stars branch of the Interstellar Drive Corporation is the only firm capable of manufacturing a thousand drives at short notice. The other firms manufacture these perfect drives for private use only, and, therefore, their output is small. Our idea is that you would be able to make a deal with Interstellar as a subcontractor, thus sharing in the rather gigantic profit. But—"

He finished: "If it should so happen that you are unable to make such a deal, it would be well to know it before signing this contract."

Having spoken, Nadlin felt better. He had put the case of the patrol squarely up to this curious young man; and if the registered circuit had been open during his words, then his objections were now permanently and legally recorded.

He saw that Artur Blord was smiling at him sardonically. Blord said:

"I have two reasons for believing that Interstellar will accept my contract. The first is that Greg

Mearsley, president of Interstellar, is a personal friend of mine. The second is that I am extremely annoyed at the patrol heads for thinking they owe me something. Accordingly, I am going to pay Interstellar their full retail price for the drives, taking no profit whatsoever for myself.

"Wait!" His voice was clipped and cool. "As you know, crystalline ore for drive steel is rare and difficult to extract. There are firms that retail it in small quantities, but the rule is, if a company wants a space drive, it must locate and mine its own ore. All the main operators, all the big freight and passenger services, have auxiliary mining services.

"That is where my profit will come in. My main determination, actually, is to help the patrol, by all means"—his voice thickened with sarcasm—"to cancel its supposed debt to me. I hope—"

The eldophone *brred* for attention. It was the plump man. He was perspiring; he puffed:

"Important . . . Haven't been able to locate Mearsley of Interstellar Drive, Artur, but I've got Crofers, the vice president on the eldo. He wants to talk to you."

"Eh!" said Blord; and Nadlin instinctively drew closer at the sharpness of his speech, to insure that he would miss nothing. "Who?" Blord was saying.

The plump man said hurriedly: "I'll keep the registered circuit open for you."

His image vanished. In his place flashed the head and shoulders of

a thick, saturnine individual. The stranger said softly:

"Ah, Blord!"

The tones of their voices would have been enough. The sardonic expression of the face in the plate and Blord's twisted smile provided verification. Here was a profound mutual dislike. Blord broke the silence.

"Where's Mearsley, Crofers?"

"Oh!" Crofers' tone was silk smooth, "he's around. If you can locate him, you're welcome."

"I'll find him—but I gather you're not going to manufacture my drives for me. Why? Refusal is illegal, you know."

"I'll take my chance. Interstellar is not required to sell as subcontractor."

Blord flashed: "It is, when the full retail price is offered. You haven't a legal leg to stand on."

The other man shrugged. "I don't know just what you're pulling, one of your famous tricks or what—but I smell Delfi Gnad fish. And I'm not involving Interstellar. When we get the order direct from the real user, as we inevitably must, we'll fill it. But you'd better hurry up and turn the contract back to them."

He grimaced knowingly. "I hear they've set a two-months time limit. Good-by, Mr. Superclever."

There was a click. Blord said: "All right, Magrusson, switch in the circuit." He turned to Nadlin, and held out the pen. "Sign please," he said.

"B-but—" said Nadlin wildly.

The gray eyes mocked him. The

arm and hand that held the pen remained firmly extended. Uncertain, confused, conscious that Ridge Star industrial politics was too much for him, Nadlin took the pen; and, bending low to hide his startled misgivings, signed.

The seven days that followed added nothing to Nadlin's knowledge. He had expected at the very least to become better acquainted with Blord. But the man, after his burst of energy on the first day, was always either sleeping, or sitting at the eldophone talking to executive members of the many tentacled financial octopus that was the Artur Blord Holding Corporation. Blord explained once with a hint of apology.

"I only slept about forty hours last month, and I've got to catch up."

Exactly what he had done during those thirty almost sleepless days was a matter about which Nadlin did considerable pondering. He thought once, startled: Those stories he had heard about this man's exploits! Could they possibly be true?

The idea was revivifying. But he wished desperately that Blord would be less taciturn about his search for Mearsley. What did the man expect him to think under such circumstances but that the president of Interstellar was still among the missing.

He was still worrying on the eighth morning when the blue sun of Yelt sprang into size out of the great dark. A blazing glory of

fire, it grew bigger and brighter, ever brighter, pouring its ravenous energy through the length and breadth of its twenty-four planet system.

It was high noon below as their ship sagged, still at full deceleration, through the thick mist that was the upper atmosphere of Yelt VII. There was the usual sense of awful and unearthly speed as they leveled off above a land of virgin forests and mountains. They flashed over a great valley where a dozen of Blord's mining ships sprawled, disgorging machinery. Minutes later, the lake of Nem appeared on the horizon, and it was only seconds after that that they came to a full stop over a scraggly settlement.

Standing beside Blord, Nadlin stared through the bottom vision-plate at the town of Lake Nem. There seemed to be about five buildings of importance, and they were all located somewhat outside the actual town.

One of the structures was a great white mansion standing on the shore of the lake. The other four buildings were clustered a few hundred yards back from the water, long, low, squat affairs, typical primitive factories.

"It doesn't look," said Nadlin, "as if she's ever been able to get very many immigrants. She—"

He jumped as a puff of gray fire leaped from the doorway of one of the buildings. Beneath his feet, the floor staggered—and then Nadlin was diving for the nearest antigravity chair. He made it, as

the ship rose like a rocket into the enveloping mists that eternally blanketed the seventh planet of hot and terrible Yelt.

Nadlin made his way back to the dais. "Yow!" he said. "She means business."

He was about to go on, eagerly, when he saw that Blord was smiling at him. It was a companionable smile, but its effect was to bring Nadlin back to reality.

His excitement died. He was suddenly not so sure that he had enjoyed the brief danger. It was all very well to take risks in the course of patrol duties; but he was a police executive now, with a mission.

It would be silly to get himself killed in one of these inter-operator wars, so common on the planets of the two-hundred-odd suns that made up the Ridge Star group. He—

The eldophone clamored an angry interruption; and a woman's face came onto the plate. The sight of her paralyzed Nadlin.

He knew instantly that it must be Evee Calder. No other human face could possibly fit the warning that Magrusson had given about her on the first day.

Without that advance cautioning, Nadlin would have cried out with shock.

Her eyes were black, sunken pools of agony. Her face was the color of snow, drawn and somehow horrible. Her mouth was a thin, twisted, colorless line.

Yet she did not look old. There were few lines even in her forehead, and, when she spoke, her voice though weak and a little harsh was that of a young woman. Here was that tragedy of tragedies: a pretty woman in the final stages of



a virulent wasting disease. She said coldly:

"Artur Blord, I presume?"

"Correct. Madam, I would like to convince you that you are being unwise in—"

She cut him off: "I have decided to let you continue your mining operations where your ships have landed provided—"

"Eh!" said Blord sharply. "Then why the gunfire? And why the earlier refus—"

"Provided," the wan voice went on with a semblance of firmness, "neither you nor your men make any attempt to come within a hundred miles of my settlement here, and provided you pay me half a steller a ton for the ore you take. If that agreement is broken in any way, the charge per ton goes up to one steller. Is that clear?"

"Now," said Blord heartily. "Now, you're talking."

"Very well. I have taken our conversation on a wire. The contract will be drawn up, and sent you; and we can sign later on the registered circuit. That is all. Good-by."

The eldoplate went dark—and the two men stared at each other. During the conversation, Blord had shown no sign that he was affected, but now for the first time in the entire trip, Nadlin saw, the man was jarred out of his basic calm. Blord gasped:

"Did you see *that*?" He added in a frowning afterthought: "I wonder what she's hiding."

Nadlin scarcely heard the last sentence. He said in a blank hor-

ror: "It's as your Mr. Magrusson suggested. She looks as if leeches—disease-ridden leeches—have been drinking her blood."

"Leeches!" said Blord.

He sounded startled. The emotion behind the sound must have been immeasurably more violent than the expression of it, for he jumped to his feet, and his eyes were widened pools.

With an effort he seemed to control himself. He stood tense; and he muttered: "But why would they . . . what . . . it could be!"

He looked up in a fever of excitement. "You've hit it, man! Somehow, in spite of all precautions, one or more of those *things* has escaped."

He broke off. His face became a mask of anger. His voice, when he spoke, shook with a mixture of fury and sheer deadly threat:

"Nadlin," he said, "you and I are going down there tonight to look things over; and if some of those *things* are there, we'll come back tomorrow and do a little plain and fancy killing. That is"—he smiled grimly—"if they, with their superfast senses, don't get us first."

It was like listening to a strange language, that had no connection whatever with reality. Nadlin said anxiously:

"But what about Interstellar Drive. Aren't you going to search for Mr. Mearsley? After all, it will take a month at least for the drives to be manufactured. And, besides, I'd like to report personally to my superiors. I—"

There was no reply. His eyes

narrowed with thought, Blord pushed past him; and the door of his apartment banged shut.

Later that day, Nadlin saw him at the eldophone, talking rapidly, then listening to what seemed like a monologue from the other end.

Watching the scene, Nadlin knew once more the emotion that, it seemed to him, was fast becoming normal in his relationship with Artur Blord: the helpless conviction that he was beyond his depth and moving ever deeper into dark waters.

In the gathering dusk, Nadlin crouched with Blord beside a trail. A soft breeze, rich with the tang of warm lake water, brushed his cheeks; and every minute he felt more like a fool.

Almost he couldn't believe it. He lying here on a damp, marshy embankment, embroiled in a senseless venture, every hour spent on which endangered more the great enterprise for which he was responsible.

It might have been different if Blord had been a little freer with facts but—

Nadlin groaned inwardly, and gave himself up to his environment. After all, he was here. Whatever happened involved him, just as if he had come willingly.

In the near distance, he could make out the first and biggest of the four factories that had been visible from the air. The building was a slate gray in color, half hidden by trees. From its interior came the hum and clamor of machines. Farther away, but to the

right, gleaming white in the half darkness, was the Calder woman's imposing house which he had also seen sketchily from the air.

A weary side glance showed Nadlin that Blord was studying the distant veranda through field glasses. He must have sensed Nadlin's gaze, for he turned and said in a low voice:

"This looks to me like the trail between the house and the foundry. We'll stay right here for a while. I have an idea the leeches will keep a pretty close tab on everything that's doing. They—"

It was the words that did it, the reference once more to something that Blord had not yet troubled to explain. Nadlin cut him off with a cold fury that, in one jump, took him past the hurdle of the necessity of being polite to this tremendously important young man.

"There you go again," he said. "For days you've been evading every question I've asked, grinning at me whenever I was persistent. And now you've dragged me out here on a wild chase. I was warned you had a habit of running off on tangent schemes. But I surely never thought, when I got into this business, that I'd be lying in a ditch with a madman who babbles of human leeches, and ignores vital contracts that he's signed. You—"

A low joyous laugh interrupted his tirade. Nadlin shivered with anger, and parted his lips for a second vicious burst. Before he could speak, however, Blord said:

"Good man Nadlin! I've been waiting for you to blow up."

Nadlin's mind did a twisting downward spin. "Huh!"

The other chuckled. "If there's one thing I can't stand for long, it's a young man who remains on his manners. You can't talk to people like that. They won't open up. Now, listen, Jimmy . . . that's your name, isn't it—"

Before Nadlin could more than grasp that the lecture was over, before he could begin to decide how to take this new development, Blord was rushing on:

"I didn't tell you anything because you're a policeman; and, if you knew the truth, or what I suspect to be the truth, your first act would be, figuratively of course, to blow your police whistle, and bring a lot of other policemen onto the scene. Frankly"—Blord went on coolly—"I'm not accustomed to having the law puffing and heaving at my side. And I wouldn't *think* of putting them under further obligation to me."

He paused; then said slowly: "Have you ever heard of the human mutation called a zilth?"

"Zilth!" Nadlin echoed the word; then: "Space almighty!" he gasped.

Blord said softly: "That's right. You've got it."

Nadlin hardly heard. His mind was a whirlpool of remembrance of what he knew about those curious human creatures, the zilths.

Zilths were descendants of the first human beings to come to one of the Ridge Stars. Their ship had crash landed on one of the plan-

ets of the Zilth sun, thus cutting them off from all communication with the outside world. For nearly two hundred years they had lived in isolation.

And they had changed. Changed horribly under the stress of an unimaginably malignant disease. Nine tenths of the original settlers died raving idiots. The survivors and their descendants suffered a violent metabolic and cerebral transformation. In all the universe of man, nothing like it had ever been seen before.

The change involved an enormous speed-up of reflexes; faster acting muscles; swifter mind response. It was a genuine physical and mental mutation of the first order.

There was only one thing wrong with it. One deadly, horrible thing: Every zilth remained a carrier of the disease that had made him what he was.

The commission of doctors who, with an array of battleships behind them, investigated, recommended that the entire Zilth planet be figuratively fenced off. And that this be enforced by the most rigid system of police control conceivable. Outside this area zilths were to be shot on sight; and inside it there was to be a scientifically planned birth control designed eventually to wipe out the race.

Laws were accordingly passed. No zilth, so far as he knew, had ever escaped— But—if they had—were he and this madman Blord actually seeking contact with them?

He mumbled words of protest.

And was cut off.

"Sssshh!" Blord hissed. "Here comes somebody. Don't forget the senses of zilths react five to ten times as fast as those of normal human beings; and, since this is only a preliminary investigation, I haven't taken any usual elaborate safety precautions."

Through the tall, gently swaying grass, Nadlin made out two shadowy shapes approaching rapidly along the pathway. They were extremely elongated, extremely thin shapes. Chilled, he found himself remembering a picture he had seen of zilths, throats starting at the chin like puffed-up frogs, eyes protruding, bodies unnaturally thin—unnaturally long.

The tense thought flamed: His badge! If they were caught and—

He made the mistake, then, of reacting to that sudden thought, of shifting his position and moving his arm, as he brought his badge from under the lapel of his coat and down to the skillfully concealed pocket in the seat of his trousers—

The blackness receded from Nadlin's vision. He was, he found, lying with his hands bound behind his back on a metal floor in the control room of what seemed to be a junked spaceship. The room was bare metal, no ornamentation, no visible automatic machinery and devices; the drab, stripped effect extended to the limits of his narrow range of vision.

A movement glimpsed from the corner of his eyes ended the thought. He twisted about—and

stiffened. Artur Blord lay ten feet away, watching him. Shining strands of wire held his legs together, and his hands were awkwardly behind his back. Blord said:

"They're away right now but, according to my timing, they ought to be back any minute."

The information brought no easement. Nadlin was thinking: This was *his* fault. It was he back there on the trail who had moved after being warned not to—and instantly creatures had darted at them. There had been a sledge-hammer blow—

With a start, he remembered what the action of his was that had caused the discovery: His badge, with its special functions—saved.

He felt better. But it would be folly to use the badge to release Blord and himself—if, just as they were climbing to their feet, the zilths broke in on them. And yet, to wait for their arrival—

Horrid memory came that these things were disease carriers—and the sweat came out on his face.

Oh, space, he thought, *space!*

He began to work his hands downwards towards the secret pocket. The first slash of pain stabbed from the wrists up either arm, and lodged like a drilling needle high up in the shoulders. The agony was as concentrated as the flame of a blaster; and it stopped him hot, conscious that the process would have to be immeasurably slower.

Waiting for the anguish to subside, he said:

"What I can't understand is how come there's no record of any zilth ever getting away from his planetary system?"

Blord was smiling grimly: "But there is. I checked on that the afternoon of the day we were captured. The escape was pulled off about twelve years ago by two zilthas named Wilf Peterson and Hidlo Creighton, crew members of one of the slow interplanetary ships permitted zilthas. At the time they radioed they had crashed on a meteorite, and were never heard from again.

"Actually, their ship was not wrecked. Somehow, it had been equipped with a makeshift inter-stellar drive—and here it is."

"Huh!" said Nadlin.

He looked around him; and now he saw as with new eyes— All the incompleteness, the old fashionedness explained. He had seen pictures of ships like this in his textbooks. He grew aware that Blord was speaking again:

"I suppose they headed for Yelt because it's the nearest sun but one to Zilth. The trip with their makeshift drive took them nine years. I figured that out on a basis of some translations of medical books I have in the library of my ship. According to them, the condition in which we saw Evee Calder is a late stage, reached at the end of the third year of—"

He stopped. He lay, the muscles of his face contorting. He said finally with a strange quietness:

"I'd almost forgotten her. Her whole settlement must be infected."

There was silence. Nadlin had time to remember a thought that had been quivering at the back of his mind since the first moment of his return to consciousness. He said uneasily:

"Why have they left us alive?"

Blord laughed harshly: "They've caught a policeman and the owner of the fleet of freighters they tried so hard, through Evee Calder, to prevent from landing. In their place, wouldn't you try to figure out some way of using us?"

"I think," said Nadlin slowly, "we'd better get out of here. I've got a police method of escape that—"

His words trickled to a halt, because there was something in Blord's gaze, something— With a gasp, Nadlin twisted at his wrists, tensed himself against anguish—and reached for the hiding place of the badge.

The pain flashed with livid strength. But he reached the tiny pocket. Slowly, he withdrew his probing fingers from the emptiness they found. He heard Blord say:

"I'm afraid they searched us rather thoroughly. They—"

The clangor of a distant air lock jangled across his words. Almost instantly there came the muffled sound of voices.

The zilthas had arrived.

Nadlin's tensed muscles relaxed. After a minute the sounds were not only as far away as ever, but growing more confused. Puzzled, he glanced at Blord, whispered:

"What are they doing?"

Blord shrugged. And when he spoke it wasn't to answer Nadlin's question. He said earnestly:

"Look, Jimmy, don't you worry too much. We're going to get out of this somehow. I have great faith in my luck, and in certain skills that I have. Just don't be too surprised at anything I do."

Nadlin suppressed the impulse to point out that luck had been proven to derive from an intricate combination of positive capacities and abilities, among which foresight stood first. He suppressed the bitter words because, no matter how basically innocent he was of having caused their present predicament, his was the immediate responsibility for their capture. He said finally:

"This confidence of yours—may I ask some questions?"

"Go ahead."

Nadlin began quietly: "The first question will sound quite silly perhaps but—has Mearsley been found yet?"

Blord looked at him. "Not up to the time of our capture." He added: "And it's just as well too, considering everything."

Nadlin ignored the addenda. "Have you any idea how long we've been here?"

"Seventeen days."

"WHAT?" In spite of all his will, Nadlin was torn completely out of his calmness. He thought in a pure mental anguish: *Seventeen days*—Seventeen days added to the eight it had taken to get to Yelt left little more than a month in which to discharge his duty to

the patrol. A month of that would be needed for the manufacturing, which wouldn't begin until Blord signed the contract with Mearsley; and on top of that—

Groaning inwardly, he disconnected his mind from that dark trend of thought. He said hopelessly:

"How do you know?"

"The fellow," said Blord, "who tackled me got my gun before I could fire, but after that he had quite a fight. I realized the game was up, however, when the other one joined him, and so I bit hard into my one false tooth, releasing the many purposed chemical inside. It effectively counteracted the sleeping potion they gave us."

He finished simply: "Since then I've been lying here waiting for you to come to."

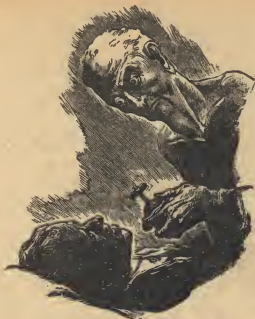
The unvarnished account shook Nadlin, unexpectedly. Against his will, a picture formed in his mind. He saw the fight as it must have been, himself instantly demobilized, but Blord reacting with a ziltlike ferocity, and almost getting away.

It was not a satisfying picture. Particularly the part played by the police left much to be desired.

After a wry moment, he said: "But what about food? Surely, in seventeen days we—"

"They fed you intravenously, me normally. They—" He broke off hurriedly: "You'd better ask your questions. Each time they've come in the past, they've first loaded equipment aboard, and then marched in here."

"Nothing more to ask." Nadlin



shook his head wearily. "What I had in mind is answered by the fact that seventeen days have passed.

"You see"—he shrugged—"I was hoping you had made some advance protective preparations. But I have an idea that anything like that would have functioned before the end of seventeen days."

Blord was grimacing. "Even if Macklin, my chief mining engineer, did start a search, he couldn't possibly find us, because this ship is buried under a cliff on the opposite side of the planet from Lake Nem. So—"

He did not finish the sentence.

Even if he had, Nadlin wouldn't have heard. His gaze had flicked towards the open door that led to the adjoining section of the ship. His brain thundered, and his eyes almost took root.

He stared and stared at the *things* that stood on the threshold.

They came in, smiling; and in the full glow of the ceiling lights looked considerably less alien than in that first shocked glimpse Nadlin had had.

The smile somehow deflated their froglike throats, and seemed also to set in operation muscles that drew their eyes farther into the eye

sockets. For a bare moment, they looked human and, except for an unnatural suggestion of plainness, normal. Nadlin had time to adjust to the tremendous fact of their presence; and then—

The smiles faded. And they were no longer human. It was as if in a flashing instant they had put on demon masks—or *taken off* human ones. Elongated nightmarish things, they bent for a moment beside Blord, examining his bonds, and then came over to Nadlin.

He shrank. But they seemed not to notice. And all that happened was that hard fingers touched his wrists. Then they were in his line of vision again, standing, talking in low tones. Finally, one of them walked over and began to unwind the wires from Blord's wrists and ankles.

The long strands came clear. "Get up!" the zilth commanded curtly.

Blord staggered to his feet—but fell instantly. He lay there grimacing with pain. At last he smiled up at his captors.

"I've got poor circulation anyway," he said, "and you didn't help any with those wires."

The zilths stood impassive before the dim attempt at humor. And Nadlin had time to estimate that they were easily six feet six inches tall.

After about five minutes of rubbing his wrists and ankles Blord stood up. "O. K.," he said. "What now?"

There was silence; then: "You are still prepared to send those min-

ing ships away?"

The use of the word "still" made Nadlin blink. He thought: Had Blord discussed the matter with these *things* before?"

He waited, chilled by an unholy suspicion. He listened incredulously, as Blord said:

"I told you I would, didn't I? But first I want you to repeat your promise to me for the benefit of my friend here."

The zilth faced Nadlin impatiently, its lips twisted in a sneer. "Your friend here was clever enough to recognize that he was caught and agreed to co-operate. We promised to release both of you as soon as we had made good our escape. I hope that you will yield yourself to the spirit of that co-operation."

Blord must have caught the expression on Nadlin's face. He said brusquely:

"Don't be a fool, man. The important thing now is that we save our lives."

"You fantastic idiot!" Nadlin shouted.

His voice failed him. He lay there so appalled that his brain seemed on the verge of coming out of his head. Abruptly words gulped from him again:

"You madman! Can't you see that they intend to kill us the moment we've served their purpose. Why, they're not even pretending very hard. They—"

He saw with a sickening sense of failure that he was making no impression. He lay there then so

angry that his eyes blurred, his mouth grew dry, and felt too awkward for speech; but once more the storm inside him would not be denied, and poured forth in a bitter invective:

"You scoundrel! What about your contract? Surely, you can't just go back on that." The new, violent thought came, and was instantly flung forth—"Or did you ever intend to fulfill it? When I think of the irresponsible way you handled this whole vital business I—Oh, what's the use!"

He saw that Blord was staring at him curiously. Blord said mildly:

"Why should they kill us? As soon as they leave here, they can vanish into a night so vast that it will take man at least three hundred million years to explore thoroughly his own little dust mote of a galaxy let alone the others beyond."

He added, almost as an afterthought: "As an evidence of my own complete faith in the logic of what I've just said, I told them where my spaceship was hidden."

"You WHAT?"

The dreary thought came to Nadlin that his life had become a succession of melodramatic shouts. Blord seemed not to have heard this one. He was turning to the zilths. He said:

"Don't worry about my friend. He just woke up. I'll guarantee to bring him around before you come back here again."

The zilth who had hitherto not spoken said coldly: "There is no

next. We are leaving as soon as your mining ships have left. You will remain on this ship with Wilf. Your friend will come with me aboard your former machine. And if we should be challenged, and he refuses to front for me on the eldoplate, I shall have no mercy."

Nadlin saw that Blord was hesitating, scowling. Blord said finally, urgently:

"I'm sure my friend won't be such a fool. He knows as well as I that there are torture methods that can make a human being do anything. So why not recognize in advance the futility of obstinacy. Hear that, Nadlin?"

Nadlin turned his back.

It seemed to him that he had not in all his life so thoroughly despised a man. So this was the famous Artur Blord, the man whose courage and audacity was a byword, the famous operator who always outsmarted his enemies, the financial and industrial wizard who never failed to deliver the goods.

What a laugh. What a monstrous and unprincipled propaganda must lie behind such a faked reputation. What a—

He grew conscious that Blord must be at the eldophone. For one of the zilths was hissing:

"If you attempt betrayal, we'll cut you off before you can finish the first word of it."

Blord's voice came. "Don't worry about me. I'm only too aware of the speed of your reactions—" There was a pause; then: "Oh, hello, Macklin . . . Now, don't get excited. Sure, I'm all

right. They've found Mearsley? Well, it's too bad. Tell him from me he's out of luck, and that he can blame Crofers for the loss of the biggest contract they'll have a chance at this year.

"But now listen: I want you to pull up stakes, and go to that job on Carox A II. You know the set-up. And get busy. I want you out of Yelt in two days. I'll be seeing you. So long."

There was a click.

The door opened. Nadlin looked up from the bed on which he had been tossed so many hours before that the time seemed meaningless.

"Oh," he said, "it's you."

The zilth was bleak. "A ship has appeared in the distance. I think it is my companion but you can see yourself it would be foolish for me to put my image on the eldoplate. You will accordingly prepare yourself to front for me."

Nadlin's pulses were leaping. "Ship!" he said.

His high hope faded as he saw the expression on the zilth's face. Before the threat that glared down at him, his own eyes narrowed.

"You'll get nothing out of me," he said harshly. "I'll die before I make a single move that will keep a thing like you alive to spread your incredible disease. Have you no sense of horror at what you're doing? Don't you realize that you can wipe out the human race and—"

He stopped. The unnatural, the inhuman ferocity of the creature that was watching him so intently

penetrated with all the chilling deadliness of a knife made of the pure unbreakable oxodentic ice. The zilth uncontrorted its features finally, and said in a strangely gentle tone:

"I expected preliminary persuasion would be necessary, so I brought along some primitive equipment that I managed to tinker together in the machine room."

It reached into its pocket, and produced a thumbscrew. It sat down on the bed beside Nadlin. It was smiling now, and it looked almost human.

"But of course," it went on in that same gentle tone, "we zilths are accustomed to working with primitive tools. We, the greatest race in the universe, the superman mutation, the man *after* man, the—"

Its voice rose sharply. It must have noticed the developing emotionalism, for with a click of its tongue it cut off the words, and sat there smiling. It said finally, softly:

"You will pardon my intensity. After all there is some justification for our—irritation—with man's plans for us. Fortunately—"

The smile faded. The protruding eyes glinted. The naked, hideous rage that was almost consuming it stood out like whipcords on its pale countenance.

"Fortunately," it hissed, "we shall some day be in a position to repay every insult, every vile intent, and, above all, the insufferable presumption that the higher

race must be sacrificed to save the lower.

"We shall go, we zilths, into the great dark, to distant and unfindable planets, and there we shall breed our kind in ever vaster numbers. But we shall come back; yes, back—back to conquer and destroy, to raze and avenge, and to rule, of course, like gods, until *our* special death snatches the weak, and makes fellow zilths of the strong."

Once more it clicked its voice into silence with a tongue sound. Then said:

"But enough of this. Boasting does not become the great. Let me have your thumb, my friend—Before I am finally through with you, you will be shrieking for the death which, naturally, I shall give you in the end. We—"

It stopped, and whirled, and snatched at its gun, all in one synchronized action. There was a flash of fire from the door.

Artur Blord pulled the dead body from where it had collapsed on top of Nadlin, lowered it to the floor; and then picked up the thumbscrew, and examined it curiously.

"I'm glad," he said, "that he was holding this. It interfered with the fastest draw I've ever seen, bar none."

He tossed the device onto a table, and pulled a small object from his pocket. In a blank amazement, Nadlin found himself staring at his own badge. As its dissolving force cut the wires that bound him, he found his voice:

"But—" he gasped wildly, "but . . . but—"

"It's a good thing," the chief of the patrol police was saying heartily, "for a young man to have an adventure with Artur Blord. The man is an education in himself."

Nadlin nodded gloomily. He was, he realized, being let off easily for failing in his assignment. For five days, ever since he had been transferred from Blord's ship to the patrol vessel that had contacted them late on the sidereal day of his rescue, and brought him to patrol headquarters on Marmora II, he had dreaded this moment of personal report.

So far, he had yet to get in a word edgewise.

"Blord has an idea," the chief chuckled, "that young men don't like him. All nonsense, of course. How can anybody help but admire the way he mentioned Carox A II, when he was talking to Macklin, his chief mining engineer, with the zilths right there."

Nadlin jumped. The blow of realization, the intense consciousness of how stupid he had been not to see *that* part before, made a searing path through his brain. He gasped involuntarily:

"That's the planet that's all ocean except for one tiny island!"

"Exactly." The gray-haired officer was smug. "You don't send mining ships there. It's a long-standing danger signal between Blord and his chief executives—partially nullified by the swift departure of the zilths, but neverthe-

less an example of his varied technique—as are the multiple devices. he has for recapturing his private yacht. Truly, a marvelously coordinated human being.”

Nadlin presumed darkly that the conversation was still about Artur Blord.

“How many men in his place,” his superior glowed on, “with the means of escape—your badge—ever to hand, would have lain there seventeen days waiting for the zilths to load up from their caches? Caches which it is doubtful we shall find until the planet is thickly settled—even yielding up his own ship, so they would bring more units out of hiding.

“Of course, he didn’t have the worry that less well-informed men might have had, about catching the disease. As most intelligent people know, it is like leprosy, takes about six months before it becomes communicable, regardless of the intimacy of the relationship with the carrier.”

The man looked at Nadlin sharply: “You knew that of course, didn’t you?”

Nadlin, who had only known that fact five days, mumbled something. The other went on:

“The rest, of course, was logically simple. Even zilths must sleep—and they die most easily when caught by surprise. When I was having lunch with Mr. Blord an hour ago—”

Nadlin sat up. “Is Blord here?”

“Oh, didn’t I tell you? He ar-

rived this morning with the two cargoes—”

His voice went on; but Nadlin was thinking wryly: The gall of the man, coming here to patrol headquarters like a conquering hero, brazenly ignoring the fact that he had failed to fulfill his contract. So that was how reputations were sustained. It was an education all right.

The chief’s voice crept back into his hearing:

“—Naturally, we’re giving out no publicity until the devil’s plot is completely foiled. Even interplanetary travel will be forbidden zilths in future, their primitive ships taken away. To think that those two creatures actually supervised the building of twelve hundred interstellor drives on Yelt in three years, enough to enable half the zilth race to escape. I shudder—”

“Twelve — hundred — drives!” said Nadlin faintly.

He saw that the other was rubbing hard hands together in a profound satisfaction.

“Amazing total, isn’t it? We’ll be able to go into the Eastern Ridge a month ahead of schedule. Blord is taking twenty-five percent of the total price, leaving the rest to Evee Calder. Doctors got her and her workers in time; though it will take about five years to effect a complete cure.”

“The trouble is, the patrol will never be able to repay Blord now.” He sighed, finished: “So I don’t think we’ll even try.”

THE END.



The Rulers

by A. E. VAN VOGT

The Committee was convinced of their omniscience—and omnipotence. True, they'd underestimated two nations at two times—but a single man was not an important antagonist, merely a live corpse in the way—

Illustrated by Williams

It was a typical Washington dinner party. Minor political lights adorned at least a dozen chairs; and here and there along the massive table sat men who were of more than satellite importance.

One of several inevitable discussions had started near the hostess—that was purely accidental—and the dinner had reached the bored stage where almost everybody was listening with polite attention.

"Science," the plump man was saying, "has made such strides

since the war, that it's already possible to foresee a time when everything we do, or use in any way, will be either completely artificial, artificially enhanced, supernatural or better than the original."

The dark-haired man with the quizzical expression shook his head.

"If that proves true, it will be because the human race is lazier than I for one believe. Plastics I might concede without argument but with mental reservations. I'll even go so far as to agree that

anything which does not directly affect the human body can be made artificially, and it won't matter. But when you come to the body itself—no, sir.

"Vitamin-enriched foods, for instance, contain only the extra vitamins, but natural foods contain not only the well-known factors such as vitamins, minerals, but also all the as yet unknown factors. Finally, show me even a near substitute for the human brain, and I'll accept your point."

"It isn't so much," said the plump man with satisfaction, "that there is a substitute, but have you perhaps heard of the *h* drug? It's not a brain, but it so modifies the mind's natural impulses that it might be said to create an artificial brain."

At this moment, the hostess showed one of her periodic signs of life.

"*H* drug?" she echoed. "Artificial brain? I know just the man to decide any such questions."

She turned, gushed: "Dr. Latham, will you stop talking for a moment to that perfectly beautiful wife of yours . . . you don't mind, Margaret? . . . and come to the aid of these poor gentlemen."

Dr. Latham was a tall, slender man with a lean, sensitive face and quick brown eyes. He laughed.

"It just so happens that I heard the arguments with one ear."

"And me with the other one, I suppose," his wife pouted.

He grinned at her. "You're not really mad, so don't even try to pretend."

She sighed. "That comes of being married to a psycho-medician, a man who can practically read minds. What a life."

Latham ignored her blandly. "I think," he began, "I can illustrate the argument very neatly by a case I handled for the government a year ago . . ."

By half past eleven, Latham knew that he had found what he had been sent after. It was time, therefore, to dissemble suspicion. He excused himself from his guide, picked up the desk phone of the office they were in, and dialed his hotel.

Miss Segill's face appeared on the screen. "It's you," she said.

Her eyes brightened. Her cheeks thickened with eager laughter lines. Her mouth crinkled. A thousand tiny muscular adjustments transformed her face in one instant from quiet receptive attentiveness into a mask of brilliant smile.

There were accompanying signals of marked glandular activity, Latham noted, plus a tendency—breathlessness, slight parting of lips, fingering indecisiveness—to a lowering of neutral integration.

Latham studied her appreciatively. He had decided at an early stage of their acquaintanceship to marry this secretary-nurse of his. It was good to know that her love for him rode higher every day.

He broke off the thought, said:

"I'll be through here in another half hour, Miss Segill. Bring your notebook to the little restaurant we

saw last night on the way to the hotel—you know the one I mean—and we'll have lunch about 12:15. There won't be much to note down. Got that all?"

"I'll be there," said Miss Segill; then quickly: "Doctor."

Latham paused as he was about to hang up the receiver. The young woman's expression had changed again. The smile was fading now. Replaced by an intent look, crinkled lines between the eyes, a shadow of a forehead frown. Her mouth twitched faintly. Her face lost some of its color; she looked generally tenser, as if her muscles had stiffened.

Anxiety for him intermingled with a tremulous curiosity as to what he had discovered.

"Nothing important, Miss Segill," Latham said. "The whole thing is becoming ridiculous."

He hung up before it occurred to him that she had not actually *asked* the question he had answered.

Latham clicked his tongue in self-annoyance. He'd have to watch out for that. His habit of reading people's thoughts and feelings by a detailed and instantly analyzed understanding of the language of facial and other expression would make him seem queer.

With his ambitions, he couldn't afford that.

He put the matter temporarily but decisively out of his mind.

"Let's go," he said to the guide. "This part of the hospital now, and then I'll be on my way."

"I wouldn't go in there if I were you," the man said in a quiet voice.

"Eh," said Latham. "Don't be silly. I have to—"

He stopped. The abnormalness of the guide's words struck into him. An ugly thrill trickled up Latham's spine. With a jerk, he turned and stared full at the fellow.

Realization came that he had run across the exception to his ability to comprehend the mind behind the flesh.

The man had been a dull-spoken, mindless nonentity named Godred, or Codred, a creature that said: "And this is the fifteen floor annex, where we keep the patients from Rumania." Or "Main operating room, sir, for the Austrian staff." And said it all without a hint of vascular, muscular, neural or cerebral disturbance.

He was smiling now, faintly. Where there had been stolidity, intelligence shone like a light replacing darkness. His body lost its heaviness. He straightened, grew perceptibly taller. His lips took on lines of authority. He measured Latham with a sardonic smile. He said:

"We have tolerated your little investigation, doctor, with a mixture of amusement and exasperation. Now we are weary. Go away, depart while you have a whole skin. And don't go through that door."

Proof, Latham was thinking, here was final proof. He'd have to take a look, of course, into the room. After that—

His mind wouldn't go that far. He said aloud:

"Are you mad? Do you not realize that I represent the United

States government?"

The man said: "*Don't go through that door!*"

The door was like the others: a many wooded hardwood combination, beautifully interlaid, and without paint or varnish of any kind. Sandpaper had wrought that miracle finish.

It opened at the pressure of Latham's fingers, with only normal resistance. Its threshold held his rigid form for the bare instant that he stood staring.

Then he was running, back the way he had come. The guide grabbed at him. But Latham's movements, his whole reaction, was too quick.

It was the abruptly realized distance to the nearest exit that gave him his first hard shock of fear. Instantly, even as he ran, hope collapsed within him.

Like a dream was that race along marbled and paneled corridors. One of those mad dreams of being pursued along endless miles of twilight hallways. Only—it came to Latham with a pang of amazement, as he reached the outer door—he was not being pursued.

He knew better than to stop. There was a rather long paved driveway leading to the nearest street. And a taxi just turning a far corner.

He projected his long body, and, gasping, succeeded in heading off the taxi. He climbed out five minutes later, waited till the taxi was out of sight, then hailed a second cab.

He got off in the depths of heavy downtown traffic, hurried through two monster department stores, and climbed aboard an elect-air car for the third stage of his bid for escape.

He was calmer now. An intent, rational calmness that included a detailed memory of everything he had said on the phone about where he told Miss Segill to meet him.

He hadn't named the restaurant. It was like consciously dying, then coming to life again—to realize now that he had made that phone call, *and failed to name the restaurant.*

They didn't know. They couldn't know. In all this enormous city, they wouldn't be able to locate a café whose only name was "... You know the one I mean!"

But Miss Segill and he would have to hurry. A quick lunch, then a Taxi-Air to Washington.

There wasn't an hour, a minute, to waste.

"I don't understand," Miss Segill said, after he had briefly described his experience. "*What did you see?*"

"Twelve men and a gun."

The girl's eyes remained widened gray-green pools of puzzlement. She shook her head ever so slightly, and its golden curls rippled and shone from the reflected sunlight that poured from the sun cones in the restaurant ceiling.

"Eat your lunch," Latham admonished. "I'll try to make it clear between my own bites. You know the law that was passed, subjecting all hospitals to federal government

inspection? The government called it a measure to enforce a uniform hospital service. That reason was a blind, as you know."

Miss Segill nodded wordlessly. Latham went on grimly:

"It's real purpose was to find this place. They couldn't conceal anything from me, and they didn't even try. The hospital is crowded with offices and nonsick patients.

"Naturally, a few offices from which wealthy convalescents could carry on their business, and a few nonsick patients, wouldn't have mattered very much. After the war certain European nationalities were barred from the United States unless they came here to see specialists. Even then their activity was restricted. They must go straight to a hospital which had previously agreed to receive them; and, on leaving, head straight for the nearest intercontinental air field.

"It was known that sometimes the visitors had quite a fling seeing American high spots before returning to Europe. But this was tolerated until a very curious suspicion started that at least one of the hundreds of hospitals catering to this old world traffic was being used as headquarters for something immeasurably bigger.

"That hospital, which is absolutely crowded with *administration offices* and an almost completely nonsick staff, I have now discovered."

"But *what* did you see when you entered that room?"

Latham stared at her grimly. "I

saw," he said slowly, "twelve of the thirteen members of the council of the rulers of the world. The thirteenth member was Codred, my guide."

"I believe they wanted to talk to me, to find out what I knew before killing me. I don't think they expected me to make a break, and that that is why I got away.

"Primarily, I escaped because my mind and eyes are trained to grasp a picture in one tenth the normal time. Before they could think or act, before they could use the gun that protruded from an instrument board of very futuristic design, actually before they saw me, I had taken my visual photograph and departed. They could have cut me off at the outer door but—"

Latham paused, scowling. Then he shook his head, eyes narrowed. It seemed incredible, now that he had time to think about it, that they had not headed him off. How very sure they must have been.

He flicked his gaze uneasily around the fast-filling café, suddenly saw—

"Look!" he hissed. "On the telescreen."

There had been ballet music, and dancers weaving a skillful design on the wall screen. Abruptly, the music ended; the dancers flicked into vagueness.

There flashed onto the silvery structure the enormously enlarged faces of Miss Segill and himself. A voice vibrated from the screen:

"Ladies and gentlemen, watch out for this man and woman, believed at this very moment to be

in a restaurant having lunch. Their names are Dr. Alexander Latham and Margaret Segill, of Washington, D. C. They are dangerous. Police are authorized to shoot them on sight. That is all."



The music came back on. The images of the dancers resumed their crazy whirling.

It was Latham's inordinately swift observation that saved the moment. At the very instant that other people were beginning to be aware of the screen, he had already seen the two likenesses, and was whispering his commands to Miss Segill:

"Quick, your napkin . . . up to your face . . . hide."

He bent down without waiting for her to act, and began fumbling with his shoelaces. He was down there when the voice delivered its startling sentence of death.

After a moment the whole thing seemed impossible. Putting their names on the public address system of a big city. Their names, identities, without mention of a crime or charge. It indicated police connivance on a scale beyond any previous conception that he had had of the danger.

He thought in a spasm of mental agony: They hadn't told him everything at Washington.

It was terrible to realize suddenly that he was considered expendable, a bullet fired in dim light in the hope of striking a vaguely seen target.

He was still busy with his shoelace, when Miss Segill leaned forward, and said in a strained whisper:

"I don't think anybody suspects. But what now?"

Latham had already decided on that. "The phone booths over

against the wall," he answered in a low voice. "I have instructions not to phone my reports to Washington, but under the circumstances—"

He broke off. "I'll go first; you follow—into the booth beside mine."

He straightened, stood up, and, dabbing his lips with the napkin, strode to the nearest booth thirty feet away. At the last minute he changed his mind, and paused, his fingers on the catch.

Miss Segill joined him there. "What is it?" she asked.

"Better plan our actions now. And act the moment I've finished phoning. Listen carefully:

"It doesn't seem possible the police can actually be in on this, but I've reached the point where I trust no one."

"I think we should go straight to the police, and find out what's the matter," said Miss Segill, who was now very white, but sounded brave. "After all, we can prove who we are."

"That," said Latham with a cold satisfaction, "is one of the things they expect us to do, I'll warrant. So we won't take the chance. I'll make my phone call, and ask for an escort of air blasts to meet the Taxi-Air we hire.

"I noticed a Taxi-Air firm a block south of here as I came along. Got that?"

"What about our lunch bill?"

Latham laughed curtly. "You can't tell me that the cashier or the waitresses have time to pay attention to that telescreen. When

we walk past the tables, you be blowing your nose, and I'll start putting on my hat. That should hide our faces to a certain extent—"

He broke off, groaned softly: "I wish I had my gun. At least, then I'd be able to put up a fight."

He half-turned away from her. "But never mind that. Go into your booth. I'll tap on the aerogel when I'm through."

"I'll pretend," said Miss Segill wanly, "that I'm looking up a number."

Good girl! Latham thought. She was standing up well. Better, it seemed to him, than he would have in her position.

He was inside the booth now. He dialed the key numbers that would connect him to the Washington Exchange. The small screen glowed in response. Quickly, Latham dialed the number of the CISA office.

The screen flickered, seemed to have difficulty formulating an image, and then went dead.

Latham frowned at it, startled. But instantly he dismissed the fear that touched him. The police perhaps; men could always be bought. But not the entire, completely automatic telephone system of a city of a million population.

He shook his head, irritated by the fantastic suspicion—and redialed his two numbers. This time the screen lit, and stayed lit, and at exactly the right instant the image of a man's head and face formed on it.

"Emergency!" Latham said. "Take this down and—"

He stopped crazily. Then he stood and stared at the sardonic countenance of the Codred who had been his guide at the hospital. The man said mockingly:

"Yes, yes, doctor, go on with your report"—he paused; then hurriedly—"but before you leave the booth please be advised that, once you started running along the corridor, we decided to let you thresh around in our net for a few hours. Your mind will react better to our purpose once it attains to that sense of perfect helplessness which we—"

Swiftly as he was speaking, it was still dragging out too long. Talking to gain time, Latham thought. They must have traced the call after the first failure of the phone.

Standing there, flashingly picturing the tremendousness of what had already happened, he felt his first terrible fear.

He hung up, trembling, backed out of the booth. And then slowly gathered his courage into his body again.

He mustered a smile for Miss Segill. But it must have been a sad affair; for her eyes widened:

"You didn't make the call," she said.

Latham didn't have the will to lie to her. "Can't explain now," he said. "We've got to get to that Taxi-Air."

He thought, with a blank dismay this time: If only he had his gun. How *could* it have disappeared from his bag? No one had been

near it; and night marauders might not have the advance sense to know that they couldn't enter a psycho-medician's room. But they'd know afterwards, on the way to jail.

Could it be that he had only imagined he had packed it?

He felt better when he reached the street without incident. It seemed to take an unconscionably long time to bridge the gap of one block to the Taxi-Air station. But the very crowds that held them up provided a comforting sense of being unidentifiable.

The station was the usual kind. It had a short runway extending over several nearby roofs of business buildings, and an all-aerogel construction, partly transparent, partly translucent, partly white as driven snow.

There were a dozen Taxi-Airs in the lower garage. Latham selected a Packard model he had operated frequently. The driver was reading as they came up, but he put his book away promptly.

The man's face twitched as he saw them. The pulse in his neck throbbed visibly. His eyes seemed briefly to reflect more light.

He smiled, and said affably:

"Where to, folks?"

"Middle City," Latham said.

He spoke automatically. He had decided on the destination when he was leaving the phone booth, when it was already very clear that anybody heading directly for Washington either by phone or air would be pulled up hard.

Actually, now that the driver had

reacted as he had, the destination didn't matter.

His plan was simplicity itself. The driver would hold open the door, and let them in. Then he would go around to the other side, and ease himself into the driver's seat.

Only that wouldn't happen, Latham calculated. Because *he* would lock the doors as soon as he got inside, dive for the controls, taxi up the winding runway to the roof, and take off. He, Latham—

His thought staggered. Because the driver opened the door, and climbed in himself. From his seat, he grinned.

"Climb in, folks," he said.

For an instant, then, the whole business seemed insane. A moment before, the fellow's recognition of them, with its implications, had been something to foil as cleverly as possible. But now that the man was handling the situation in such a casually efficient manner—

He looked so normal, decent, ordinary, a big, easy-going, lumbering chap of about two hundred pounds. And, maddest of all, they had picked him out by pure chance, one man of dozens in one of a hundred or more air stations.

Purest chance! It was crazy, impossible, a nightmare. But—with an effort Latham checked the violent swirling of his mind—it was real. Real and deadly and terrible and unmistakable.

There *was* no mistaking the thousand subtle reflexes that showed in the fellow's every movement, every expression.

The driver was one of them. Not just a hastily conscripted recruit. But a member of the gang.

As he climbed in, Latham tried to picture that: All police, all taxi drivers, broadcasting companies, telephone firms— What was going on here!

What was it Codred had said: "... Let you thresh around in our net a few hours."

Net? It was a solid steel wall. It—

The Taxi-Air was moving. Latham sat stiffly, watching it twist up and up the inclined plane. Abruptly, they were out on the runway, speeding. The throbbing of the rocket tubes was loud for an instant, as the mufflers were partially opened.

Then they were closed down; and there was only a faint purr of power. Latham glanced into the forward viewers. In the far distance straight ahead loomed the fifteen-story Many Nations Hospital.

Five minutes, he estimated, at city speeds.

Five minutes! Latham shook with a sudden appalled consciousness of what he had done. Climbed into this Taxi-Air knowing what the driver was.

True, refusal would have precipitated a crisis but—

He could attack of course, physically. Except that the driver looked too big, *was* too big, too alert, and in good condition. These psychomedicians, Latham thought in agony. Why hadn't he ever taken exercise?

With an automatic will to find some blunt instrument, he poked into the side pockets of the machine. They were empty. A quick glance into the viewers showed—

Three minutes to go!

As the swift seconds passed, he began to brace himself. There was nothing for it, but an attack. He could already see himself being smashed by fists, his head crunched against the dashboard by hamlike muscles, his eyes blackened.

He had attended assault and battery victims; and he had the distinct thought that it was to his credit that he didn't let the remembrance slow his gathering will to desperate action.

But if only he had some instrument, something heavier than his fist.

His gaze lighted on Miss Segill's tightly clutched purse.

"What's in there?" Latham hissed in a spurt of hope. "Anything heavy, solid?"

He had the wild feeling that his *sotto voce* was so loud that the driver must hear. But a glance at the rear-view mirror showed that the part of the man's face visible in it was calm. It was an honest countenance, a little tense, but untroubled by recent disturbance.

It was impossible even to let himself think of the meaning of the unmistakable honesty that reflected in every ripple of the fellow's expression.

Miss Segill said: "Nothing in purse. My notebook, odds and ends. What's the matter? Is any-

thing wrong? I've been intending to ask you about the phone—"

She didn't suspect. Actually, of course, only a man with his training could know the truth. Latham cut her off by snatching the bag from her fingers.

There was the notebook, two inner purses, a mirror, a host of metal containers of rouge, powder and other toilet accessories. But the metal was the noncombustible magnesium alloy, slangily called Maggie's Dream by the light metal trades, but something far swankier in the cosmetics field—Latham couldn't remember what.

It didn't matter. There wasn't a thing in the bag that weighed over four ounces. The whole business, including the cunningly shaped hardwood clasps, including the hundred separate items inside, wouldn't run to much over five pounds.

His mind paused. Five pounds? He saw that the plane was sinking down. There was a great, shining roof below— Not a moment to ponder the anaesthetic value of five pounds of fluff.

He clutched the bag, clasp downward. He leaped forward. He struck. And struck again and again.

And again and again and again. Somewhere deep in his brain was a startled recognition that fear was making him merciless.

The driver's head sagged, then his body crumpled. Latham stared dully down at the unconscious body; without a word, finally, he handed Miss Segill her purse. With

only a glance at her dazed face, he set himself to the task of dragging the driver into the rear section.

He couldn't do it. He felt like a rag, his muscles lifeless. The heavy body came so far, then wouldn't budge.

In the viewer, Latham saw that the hospital's shining roof was behind them now, receding slowly.

He leaned over the driver, and pulled the hand accelerator hard over. The machine picked up speed.

The jar of acceleration was too much for him. Exhausted, Latham collapsed into the seat beside Miss Segill. He sat there dully for a moment, but swiftly his spirits perked up.

Safe! It hadn't struck him, but it was so. They need only roar on eastward at top speed, get rid of the driver and—

"He's coming to!" Miss Segill whispered.

"Give me your purse!" said Latham. "And then give me a hand with him."

A minute later they had the bulky carcass in the rear compartment. Latham climbed over to the front, pulled a parachute out of the emergency locker— As he dumped the driver overboard, he pulled the cord.

He watched the chute open up like a great white umbrella with a human pendulum swinging below it.

The spectacle intrigued him for a moment, but then he remembered where he was. He slid into the driver's seat, and pressed down on

the highly sensitive foot accelerator.

He turned to smile at Miss Segill. His smile faded. The young woman was staring fixedly into the rear-view mirror.

She must have caught his glance from the corner of her eyes. She faced him jerkily.

"There're some air blasts behind us," she gulped. "They look like police or something. Do you think—"

It didn't, Latham reflected bitterly, need any thought.

He was conscious of a sense of resignation, as he studied the air blasts. There were seven of them. All were long and black, with the very stubby wings of the extremely fast, ultramodern police patrol craft.

Even yet it was hard to believe that they were really police. With abrupt decision, Latham flicked on the short-range radio, about which cynical drivers had often said: "I'd rather lean out and yell!"

Latham smiled grimly at the recollection, then said into the mouthpiece:

"What do you want?"

A young man's face formed on the dashboard screen.

"You!" he said.

"Do you realize that I am an agent of Congress, acting for the president of the United States?"

The answer came coolly: "We don't recognize either Congress or the president. You'd better surrender."

Latham was silent. He felt the

shock gathering inside him again. The young man looked American; his voice, his accent sounded so colloquial that the words he spoke seemed but part of a play, one of those impossible dramas along the lines of "It Can't Happen Here!" so popular a few years before.

An earlier thought came back, stronger now, more dismaying: What did it mean? The shreds of explanation that had been given him, about there being a group of men who consciously thought of themselves as rulers of the world, seemed inadequate now.

Because Americans wouldn't give allegiance to any group like that. It wasn't a matter for argument. They just wouldn't, that was all.

There must be a deadlier explanation, something infinitely threatening, something—

The stupid thing was that, while, by capture and — methods — they would find out what he knew, yet killing him wouldn't prevent the CISA from suspecting the hospital. His report, for instance, was due this very night.

What did the thirteen rulers hope to gain?

A moment longer, Latham stared at that youthful, cool-voiced traitor; then with a gesture broke the connection. He switched the indicator over to "Telephone," dialed the Washington number of the Committee Investigating Subversive Activities that he had tried to get from the restaurant.

He felt no particular surprise when the face of Codred appeared

on the screen. The man said blandly:

"What you are confronted with, Dr. Latham, is organization. The radios on all Taxis-Air and air blasts of this city do not connect with the nearest exchange. They connect with our own city's automatic center. For today only, or rather, so long as you are at large, all calls to Washington will be switched to me and my staff here. We let the harmless ones go through, but will naturally stop you every time. You have been amazingly agile, but, of course, you cannot succeed."

"I'm not caught yet," Latham said grimly.

He suppressed the impulse to ask some leading questions, hesitated, then broke the connection. No vital information would be imparted to him at this stage; and it was not the moment to listen to lectures that could have no result except to throw him off guard.

With narrowed eyes, he studied the air blasts. They were quite close now, two of them forging a little ahead of his craft, all pressing nearer.

Latham had a sudden mental picture of a newsreel he had seen some years before, in which three police craft were shown catching an air-car.

Catching it, grappling onto the standardized grapple rails—to be without which was an offense subject to heavy fine—and swiftly dragging it to the ground.

Theoretically, a driver with his lightning vision should be able to

dart rings around pursuers by the mere ability to see faster what was happening around him. Theoretically, that was. Practically, the armored police ships need only cling boldly to their courses, and let him smash his lighter machine against their impregnable hides. Nevertheless—

He swung around on Miss Segill.

"Hang on," he shouted. "It's going to be a wild ride. I—"

He stopped, and stared at her. Her face was changing. It was not a subtle transformation. What was missing was the dominating expression of love adoration and—

If he had been in the back seat with her, he could have frustrated her action. As it was, there was nothing to do but squirm with the

beginning of a halfhearted move to climb towards her.

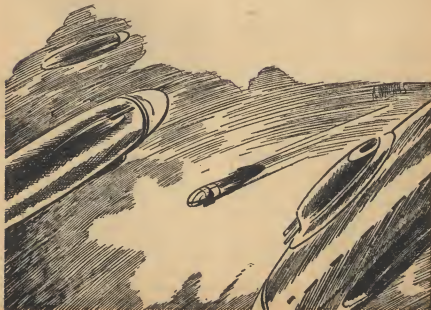
She had raised her skirt, exposing a considerable reach of gleaming leg, around which was a holster with a tiny gun in it. *His* gun!

She drew the gun, and pointed it at Latham.

"I think," she said coolly, "that at this point I can safely do my bit in this business. You will put up your hands, doctor, and keep them up until you're told otherwise."

The plump man at the dinner table made an interrupting gesture with his hand.

"Just a minute, doctor. We've all heard some of the details of this story, of course, though the



press version was curiously garbled. But this Miss Segill who held you up with your own gun—she's the gorgeous blonde sitting beside you there—your wife?"

Latham said: "Naturally, at that moment I knew what the explanation was for everything. The amazing thing was that I, with my knowledge, shouldn't have guessed earlier. I knew I had not misread Miss . . . er . . . Segill's feelings for me, nor her character. Just when they got at her it's hard to say, probably the night before. Her instructions must have been to take a hand at a critical moment, and she undoubtedly didn't become aware of those instructions until that moment.

"Anyway, looking at her there in the Taxi-Air, I realized then an immensely potent artificial control had been put over her, and what it was."

The plump man said: "The *h* drug."

"The funny thing about that," Latham went on, "is that, like so many potential world-controlling devices of the last century—the submarine, dive bomber, radio X and so on—*h* was invented in the United States. The inventor used it as an aid in the study of the mind, and not one of his students thought of it as a means to world power. I was one of those students, and I know."

"We simply don't go in over here for ideas like that," the other man agreed. "And—"

The hostess cut him off. She had a vague remembrance that the

plump man was somebody important, but it didn't matter. The greatest inside story of the decade was being told, and told at her table. She was M-A-D-E, in capital letters.

"Go on, doctor!" she said, and her voice was a reptilelike hiss.

Latham was led along the familiar hospital corridor by a dozen men of the patrol craft. He did not look at Miss Segill, except to note once that some of her jaunty confidence was fading, a puzzled look coming into her face.

Codred met them at the door of the room. He was smiling gently, but he said nothing, simply stepped aside, and bowed Latham past.

The moment he was in, Latham turned, and watched feverishly as Codred admitted Miss Segill and four of the guards. Latham calculated ferociously: Four! That ought to be enough.

But they mustn't be allowed to leave the room.

There must have been an intent expression on his face, because Codred shut the door, then said:

"They're here just in case you get tough. We abhor scenes but"—he smiled broadly—"we prepare for them.

"As for Miss Segill"—he faced the girl—"the effect of the *h* drug should be wearing off her any time. So just hand me that gun, please, Miss— Thank you."

Once more he turned to Latham. "As you probably know, doctor, the effect of *h* is not permanent. The initial dose must be quite strong,

and it must be administered under controlled conditions. Afterwards, a very diluted form will sustain the slave status it sets up in the brain. We use the city water system of course. However, no one drinking the diluted form only would be even remotely affected. This is unfortunate in some respects, but to use more would have deadly results on the mass already under control.

"The necessary rotelike commands are broadcast over the public address system. Is everything clear now?"

It wasn't, not everything. He felt cold and stiff and deadly. The incredible, fantastic, hellish scoundrels, using a poison like that so casually and monstrously. Why, experiments had shown—

With a pure effort of will, Latham pulled himself together. There were a number of things that it was vital he know. And calmness, however titanic the strain of maintaining it, was necessary.

With a conscious will, Latham turned away from Codred, and stared at the dozen men who sat before separate desks along one end of the room. In spite of himself, then, he glanced at the gun.

It was mounted between the sixth and seventh desks; and it held him because—he saw with a start—it was not a gun. It was an electrode of very intricate design. It projected from a metal cabinet which rested on a gleamy mobile base.

Heavy cables ran from the cabinet into the floor.

Latham groaned softly as he recognized where he had first seen a similar machine. In a big commercial laboratory, a model instrument used by the American inventors for atomic investigations. They hadn't even tried to develop it as a weapon.

Other people, with a different mind slant, had seen the murderous possibilities.

Very carefully Latham walked forward, out of the direct path of the gun, and returned his attention to the rulers of the world.

They had been watching his examination of the electrode with individual degrees of interest varying from indifferent awareness to sharp, curious stares.

More thoughtful now, Latham studied them. He remembered their faces from that first quick glance he had given them at half past eleven that morning. But certain facts hadn't struck him then.

There were not, he saw now, as many Germans as he had believed. Only three. The four others that he had mistaken for Germans were respectively a Pole, an outsized Frenchman, a Spanish Jew and an Englishman.

Of the remaining five men two looked French, one unmistakably English, one Great Russian and one Greek. Actually, of course, these men were ultra national, beyond all loyalties to any flag.

Codred, he had already decided, was an American.

It was the Greek who broke the silence, who said in a deep bass voice:

"Enough of this. Inject *h* into

the prisoner. It is important that he make a carefully doctored report to Washington by tonight."

Latham had expected that he was to receive the *h* drug. But not so quickly.

He *had* to have more information first.

He opened his mouth to say something, anything, that would give him some, at least, of the facts he craved. Before he could speak, Codred's voice came resonantly from behind him:

"Not so fast, Michael, not so fast. A man who receives *h* knowing what it is, must have his mind reduced to a condition where it feels utterly helpless against the forces that are attacking it.

"We have shown Dr. Latham that he cannot escape us. Cannot! Literally cannot. This will have had a profoundly disconcerting effect. But we must not forget that we are dealing with a psycho-medicin. Therefore—"

His voice paused tantalizingly. He came around from behind Latham, smiling sardonically.

"Let me explain, doctor," he purred, "just what you are up against. We're a very old organization, *very* old. Our leader group, which you see before you, can trace itself back to the year 3417 B.C. Whenever a member dies, the survivors after careful consideration, elect a replacement. With such extraordinary insight has this been done that our existence has only been suspected occasionally, never actually believed in.

"In the last six hundred years, no less than twelve kings have held office on our board of rulers. Until recently no war was fought in Europe that did not have our sanction. Napoleon was a usurper, but he didn't last long; even England helped to down him.

"For many generations now, it has been our intention to bring England under our control. England is our great mistake. We dismissed her from our early calculations, completely underestimated her possibilities. All our troubles have originated from that basic error of judgment.

"As a direct result of England's independence, America came into being, and, more indirectly—though I could trace every step for you beyond question, were I so minded—Soviet Russia.

"England alone, of course, would in recent generations have been helpless. Twice now, America has thwarted our will to bring England into line. It became apparent that we must first and finally neutralize the United States.

"We came to America under great difficulties. That incredible immigration law had to be gotten around by means of this hospital. Through the hospital, we slowly built up our control over this one city. It has been an exhausting process, but now we are ready.

"Starting today we expand. When you return to Washington, it will be as our enslaved agent. We anticipate that you will be able to make the highest contacts, and will inject *h* into hundreds of key

administration minds.

"America will not again interfere with our plans. Now"—his voice, which had risen to a harsh pitch, quietened—"have you anything to say while you are still able to think for yourself?"

It was a hard question to answer immediately. Hard because rage was back, choking, clogging his throat. He felt, literally, speechless. The cold-blooded account of an organization that, from time immemorial, had used entire peoples as pawns in an involved play of power, whose members felt not a twinge of conscience at the thought of enslavement of hundreds of millions—words could not but be inadequate.

Besides, the important thing for him was: Had Codred been telling the truth?

With a remorseless precision, Latham went over in his mind the shifting design of expression that had marked Codred's face as he talked.

It had fooled him before, when the man was acting as his guide, and he mustn't let it do so again. True, he had paid no particular attention to Codred then but—

What counted in reading a mind from the subtle variations of the natural physical reactions was to miss no response of a vital organ. The older a person, the easier, because blood vessels came to the surface in the nose, in the cheeks, and generally.

The bloodstream was overwhelming the most expressive. Muscles

rippled under more or less rigid conditions, but blood was a fluid, capable of a thousand subtle transformations. A score of glands pumped their juices into it to balance every emotion, every thought.

Veins contracted, arteries swelled, obscure blood vessels dilated and changed color, always for a reason. The man, who could connect cause and effect, as he could, could almost literally read thoughts.

And there was no doubt. Codred had not lied. The facts were as stated.

One more thing: He had to know which desk controlled that electrode. Utterly impossible to risk that going off.

After *that*—action!

Latham began: "Yes, I have a few words to say: words that will puzzle you at first because they involve a discussion of the different approaches to the same subject of two types of minds.

"You are the ruler type. Your interest in a drug like *h* has, I venture to say, never extended beyond a careful examination of its utility in serving your ends.

"But the drug *h* is merely a simple, positive form of hypnotism. It affects the same region of the brain.

"You would be absolutely amazed how many things the late, great Dr. Nanning and his students, of whom I had the honor to be one, discovered about hypnotism and control of the mind through the use of the *h* drug. I say amazed deliberately because I feel confident that none of you has felt the slightest interest

in the purely scientific aspects of *h*.

"Do you know, for instance, that hypnotism is nothing less than control of a second personality, and that this extra being is always consciously aware of the first, though the reverse is not true.

"When you inject *h*, you release the second personality, and because of its slavlike attributes, are able to control it.

"What will astound you is that, not only does every human body contain the two personalities, that is the conscious and the second, but also a third. This was discovered by the early French mesmerists, notably Coué, though only *h* makes control of this third personality easy. When I tell you that this third personality is aware of, and can supersede, *both* of the other two, you will—"

They had been startlingly slow to grasp their doom. Perhaps it was hard for men of their historical background to comprehend even the idea of a final ending to their tremendous and ruthless activities. But once they did understand—

The alertly watching Latham saw the facial transformations that showed where the electrode controls were.

"*The sixth and seventh desks!*" he shouted. "FIRE!"

The guns of the four guards went off as one shot.

After a minute of silence, the plump man said:

"I recognize that my argument, foreseeing the triumph of the artificial over the natural has been defeated. Your understanding and control of the *natural* functions of the human mind made your great victory possible. I suppose you evoked the third personalities of the guards while they were escorting you from the ship?"

Latham nodded; then, "Don't give up your argument too quickly. Don't forget that I could not have accomplished what I did except for the fact that the guards were under *h* influence."

The plump man responded with finality: "I accept defeat."

THE END.

IN TIMES TO COME

A. E. van Vogt starts "The Changeling" next month, the story of a high-grade executive with a large company—who suddenly discovered that he wasn't the person he believed himself to be because (a) he was apparently about thirty to thirty-five whereas the birth certificate for the identity he believed himself to be showed he should be fifty-four; (b) records showed he was shy a leg—and he wasn't. That puzzle appeared before he discovered that his wife, his company's biggest customer, his butler, chauffeur, and others were involved in some plot involving his identity—a crazy plot in which *they* gave *him* a magnificent home, a huge income. What in blazes were the conspirators after . . . ?

Commander Bullard's back next month, too. Only Bullard, full of years and honor, is an admiral now, a swivel-chair admiral concerned with grand strategy, the long view, and the wide scope. He's not able to help out the son of an old friend—anyway that's what the organization thought. But Bullard had long been known for ways that were devious, deliberate, but effective. Not even bureaucracy can stop Bullard!

The Editor.



Circle of Confusion

by WESLEY LONG

A new author introduces something new in central heating—for a frozen planet. Fine system—till a girl with an inferiority complex and a fast ship scored a bull's-eye on the Circle of Confusion.

Illustrated by Williams

Pluto is a strange planet in many ways. Perhaps it may even be classed as a "man-made" planet, since if it were not for man and his works, Pluto might as well have never been. But Pluto was found abundant in uranium, and then came man to change the ultra-frigidity of Pluto's surface, and to endow Pluto with a breathable atmosphere by transporting great shiploads of the frozen gases found on Umbriel. Then man set up cities, and since the face of Pluto

had never been scarred by any kind of intelligent life, the planners had a free and open hand.

So uranium was mined near the region known on the Plutonian maps as *The Styx Valley*, but which, with characteristic lack of foresight, was across the Devil's Mountains from the River Styx. Across the Devil's Range went the uranium to Mephisto, where it was smelted down into pigs. It was then put on barges and floated down the River Styx to Hell, which lies

across the River Styx from Sharon; both cities quartering on the Sulphur Sea.

It was loaded onto the ships of space at Hell, and then raced across the void, sunward to the Inner System where it was used.

But the names are but locationally appropriate. Hell is no fuming, torrid city. It is temperate with a perfect climate. Mephisto's only claim to the nether regions was the dancing flames of her smelting mills that danced on the night sky. The Devil's Range was a small ridge of less than fifteen thousand feet and it was more than amply supplied with passes and near-sea-level breaches.

And the cities at the mouth of the River Styx lived in cheerful rivalry, their main source of jealousy being the lush produce that came from the hinterland behind each. And the River Styx itself was a garden-spot for yachting clubs; bathing beaches lined the mouth for fifteen miles inward and they were clear-watered and pearly sanded.

Pluto had been a man-made paradise for a number of years, only because Man, the Adaptable, found it economically expedient to make it so.

No, it was not done with mirrors. It was done with a lens!

The sun should have been a piddling little disk of ineffective yellow. Its warmth should have been negligible, just as it had been for a million years before the coming of man. Pluto had been ordained to

be cold and forbidding, but it was not.

The sun was a huge, irregular disk of flaming yellow that had peculiar, symmetrical streamers flowing off; twelve of the main ones and a constantly opening and closing twenty-four minor streamers that flowed outward from the duodecagonal pattern of Sol. These streamers rotated, and looked for all the world like the pattern made by rotating two gratings above one another.

Sol, from Pluto, was as big as a washtub, because of a series of man-made stations in space half-way between Sol and Pluto. These stations warped space by the maintenance of subelectronic charges that produced a subetheric gradient which bent the usable radiations of Sol into a focus. The fact that they were points in space instead of mighty, million mile rings of metal to carry the space-warping charge made the focus of Sol irregular instead of circular, but it served its purpose and men grew used to the scintillating sun.

Certainly, it cost like the very devil, but uranium is not plentiful anywhere else, and men found it economically sound—

John McBride cocked his feet on his desk at Station 1, and began to read his mail. At the fifth memo, he jumped, startled by what was on the page before him, and his feet hit the floor with a resounding crash. Angrily, he punched a buzzer, and a younger man entered.

"Yes sir?" he asked. "What's wrong, Mr. McBride?" he finished noting McBride's startled expression.

"Tommy, take a 'gram and slam it out of here on the rush. Some fool dame is going to try to fly through the lens!"

"Oh, no!"

"Yes! Can't get Terra on the phone, confound it, so fire a 'gram, but quick! Tell her that the restrictions are still in force, and that we aren't fooling! Also that it is illegal, dangerous, and foolhardy and that we absolutely forbid her to try!"

"Yes sir!" answered Tommy and left immediately. The ticking of the teletype machine in the outer office came faintly to John's ears, but the knowledge of the message's departure did not ease the tension.

Ten minutes later an answer came back:

HAVE RECEIVED PERMISSION FROM TRIPLANET COUNCIL TO FLY FROM TERRA TO PLUTO THROUGH AXIS OF LENS. PERMISSION GRANTED BECAUSE OF STATEMENT OF NO DANGER EXPRESSED BY DOCTOR HOLMANN OF THE DEPARTMENT OF ELECTRO-GRAVITIC PHENOMENA. SAVE YOUR ELECTRICITY, I LEFT TERRA ON TUESDAY MORNING!

SANDRA DRAKE

"Holy St. Peter!" exploded McBride. Tommy winced in sympathy, because he knew what was coming. "Doc Holmann! My father studied electro-gravitics under

him. He was an old fuddy-duddy then. The old drip owns that university, that's why he's still in the E. G. chair. I'll bet you a hunk of the lens itself that the old goat doesn't even know that we are now using magneto-gravitics in the front lens element. That's the stinker!"

"Is it so dangerous?" asked Tommy. "If she uses the usual methods of coming to Pluto, she'll be going well towards ten thousand miles per second by the time she passes the front surface."

"That's the trouble," groaned McBride. "Like all other space crates, her hull will be made of cuprolum alloy, which is as paramagnetic as alnico is diamagnetic. She'll hit that magneto-gravitic warp that makes up the fore element, with that antimagnetic hull and it will be like a pane of glass being struck by a minute pellet of steel. She'll cause the collapse of the front element, and with the load-loss, the electro-gravitic elements of the aft element will fall out of alignment. Heaven only knows what'll happen. Well, we'll all know soon enough!"

"How long?" asked Tommy.

"Well, she left Terra Tuesday morning. She didn't say what time, but there's little sense in finding out right now. That hop would take sixty-eight hours at a standard 5-G from Sol. Say sixty-something, and let's see, this is about Thursday evening—Greenwich Time, but that screwball might give zonal time and have taken off from Hawaii or Sevastopol as the fancy hit her. I'd say sit tight and ex-

pect anything from attar of roses to total extinction within the next couple of hours. Also get on the lens network and tell the gang to oil up their trouble-wagons. Everything from spacesuits to hand generators. Oh Peter! I'm going to quit this ding-busted job and take up truck farming!"

"Ever hear of Sandra Drake before?" asked Tommy.

"Yeah, she's one of those fool females that isn't content with being equal to any man—she's got to prove she's better! And she doesn't care how many people she hurts doing it. If Sandra Drake gets through the lens to Pluto, she'll get her ears toasted right."

"O.K., John. I'll get on the lens network and warn the boys to prepare for trouble."

Messages began to fly around the periphery of the great lens, and the station attendants swore and began to collect tools that would be necessary to make any conceivable repairs. Small flitters were powered and made ready, and everything that carried manual controls was inspected and cleaned for action.

But Sandra Drake did not wait for the completion of the preparatory work. It was three hours after the first message flew around the lens that Sandra's ship, the *Lady Luck*, came roaring out of space and slid its nose into the magneto-gravitic warp of the front surface.

The *Lady Luck* came to a stop within five thousand miles, which

was remarkable, since she was hitting almost eight thousand miles per second. If it were not for the fact that space itself was warped behind the front surface, the *Lady Luck* and Sandra Drake might both have been reduced to a flaming mass; but no one really knows what goes on behind the surface of a magneto-gravitic warp, and the laws that rule mass, velocity, and inertia must operate under a new principle. Sandra Drake, the ship no longer capable of any but minor operation, limped aimlessly, and Sandra, semiconscious did not direct the *Lady Luck*.

In the twelve stations that made up the periphery of the fore element, the electrical equipment went crazy. Fuses blew, and circuit breakers crashed open. The magneto-gravitic warp collapsed, and the power regulation of the generating equipment could not hold the power to a safe level. Excesses went into the operating equipment and raised the operating levels to overload values. Relays welded shut; relay coils blew. Switches arced across their open contacts, and closed switches took the overload until their contact points melted: the melting stub ends made sputtering arcs of copper-green hue until the gap was too wide. The pungent smell of burning insulation filled the stations, and the personnel covered themselves with the space-suit helmets and breathed canned air.

The careful positioning of the stations that held the warp of the collapsed fore element was lost as

the tractor-pressor beam system took the unleashed overload current. The regular duodecagon pattern warped into a space pattern as the alignment lost not only its regularity of distance-between-stations, but its perfection of flatness.

Then as the raging current was stopped by open circuits, burned or broken, the internal damage stopped also. The stations that held the magneto-gravitic warp began to drift aimlessly, pulled at cross-purposes by the undirected tractor-pressor system.

The electro-gravitic warp of the second element thickened as the fore surface moved into the space formerly occupied by the fractured lens. The effect was similar to that of restraining a spring and then releasing it. The rear element went into a damped cycle of expansion and contraction, alternately shortening and lengthening the focal length. The series of stations that held the rear element were shaken in long, sickening swells as the electro-gravitic warp oscillated back and forth along the axis of the lens.

Here, in the stations that held this warp, there was no danger from electrical failure. But the long swells of back and forth movement shook the mechanical equipment until the bearings of rotating machinery began to rattle. An occasional relay would snap shut for the briefest of instants and make instantaneous circuits that caused minor imperfections of the lens.

The cycle damped to zero in ten minutes, and then the men in the

second element stations surveyed their bruises and began to pick up the mess; from every cabinet, from every bench, from every shelf, tools, supplies, and instruments had been thrown. They lay in profusion throughout the stations and must be replaced before the men could make a move toward repair.

On Pluto, all was serene. Light that had passed through the distorted lens had not reached the far planet yet, and so they did not know.

Men toiled in the uranium mines in the Styx Valley and men fought the low passes of the Devil's Range to bring the ore to Mephisto, and in Mephisto, children were just getting out of school. Women were shopping, and chatting with their friends and haggling with the shopkeepers over the prices and quality of their proposed dinners. Two hundred miles down the River Styx, at the twin cities of Hell and Sharon, men and women lolled in the warm river and played on the perfect miles of beach. The Sulphur Sea, which was as misnamed as any of the other places on Pluto, was dotted with the white sails of pleasure craft, and the occasional white wake of a power speedboat.

A foreshore on the fifth green at the Tantalus Country Club was arguing about a handicap, since one of their number was ten strokes better than the rest. A big league baseball game was in progress at Imps Park in Hell, and the home team was beating the Red Devils by a score of 9 to 8. It cannot be

recorded that Satan was pitching, though that would have been a nice touch. The pitcher's name was a staid and simple Jones.

And there were the sordid sides, too. Three men and a woman had been hit by automobiles during the course of the afternoon between the twin cities. A burglar had plied his trade to the tune of thirty-three hundred dollars from Faust's Playhouse, and was later apprehended trying to make a getaway along the Road to Hell, which connected the twin cities and was always spoken of as being named "The Road To Hell" because it permitted the citizens of either city, to go across the bridge to the opposite side. The planned name of Bifrost Bridge now appeared only on maps and formal writings since the informal name was by far the more popular.

Then without warning, the scintillating sun went out, and left Pluto once more the God of Darkness. It came on again, as the rear element extended and shortened the focal length once more to a degree slightly less than the length of the complex lens. It oscillated, and it wavered, and it danced from spot to spot on Pluto. Where it touched with perfect focus, it seared the ground and sent up huge gouts of flame and tortured earth as the whole output of the sun bore down upon a small circle. It hit the Sulphur Sea, and sent great steaming clouds of vapor floating across the twin cities. It cut a scar across the center of Bifrost Bridge, and cut the famed bridge in the middle of

the span. Bifrost broke and fell into the River Styx—and like the famed tale of Ragnarok, the falling of Bifrost Bridge preceded a period of terror.

The dancing spot of pure solar hell settled down, and with the characteristic perversity of uncontrolled things, it came to a perfect focal point of some six hundred feet in diameter, under which spot everything went molten.

Without waiting for any further information, the astronomers at the Pluto Observatory made rapid and precise calculations, and issued orders to the effect that all people must evacuate along the expected trail of destruction.

It was their quick work that stopped the casualty list short.

And Pluto, writhing in one tiny spot from terrific heat, began to cool everywhere else. Men looked at one another in fear as the cooling breezes began to sweep across the face of Pluto.

The production of uranium stopped, as did everything but the overworked communications system.

John McBride glared at the telephone. "They should know by now," he snapped, "that we can't take time to use the phone with all of this devilment going on."

Tommy handed him a spacegram. "Someone knows," he said cryptically.

McBride tore the 'gram open. "Oh, great ache! Tommy, pass the word on the lens network. Tell 'em to cut the electro-gravitic warp,

too. The thing is focused right on the middle of Pluto and is cutting a six-hundred-foot swath across the face of Pluto like an oxy-atomic torch cuts butter."

"Can't we refocus it?" asked Tommy anxiously.

"Not without moving the stations. Or playing hob with the warp-generators. Either way would take a week to adjust. Tell Adkins to pull the big switch and hope for the best. Oh yes! Tell every mother's son not to tinker with the P-T network. When we get this mess cleaned up, we're going to need the placement again and there's little sense in letting the stations run free. Thank the Lord the warp will tend to align them again, once it goes on, or we'd have a six-month's space surveying job to do."

The lens-network phone rang, and McBride answered.

"John? This is Fuller on 9. We just found Carlson under the alphas. He's knocked colder than last week's wash and he's got a bad alpha burn."

"Better get him into an interstation flitter and bring him over. Or is Doc Caldwell there?"

"No, he isn't!"

"Bring him over anyway. I'll broadcast a call for the doc."

"What'll we do without him?" asked Fuller in a helpless tone.

"What'll you do with him in an unconscious condition?" asked McBride unsympathetically. "Before Carlson can do anything, we've got to bring him into the open. Besides, we won't be ready for Carlson until

we get the mess cleared up."

"O.K.," said Fuller in an abashed tone. He hung up, and McBride snapped the button that sent a loud-speaker call through the entire system.

"Is Doc Caldwell within hearing? Call McBride."

Automatic tapes took up the call and repeated it at intervals until the doctor heard and put in a call to McBride.

"Yes, John?"

"Doc, where are you?"

"Station 27."

"What's doing?"

"Few minor cuts and a fractured skull."

"What does that mean in time?"

"Half hour."

"Then take it, and then get to 1 as soon as you can. Carlson needs attention."

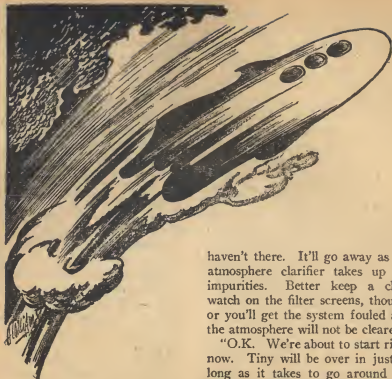
"Right-o!"

McBride called Station 9 again. "Fuller? Look, Bob, how's 9?"

"Not good," said Fuller glumly. "Only one thing outbalances the rest. The alphas went up with the rest of the stuff or Carlson would have been burned to a crisp by now. That means we'll have to run over to 1 and get a new alphas."

"Can you repair it?"

"Nope. The field coils are melted right down into a copper ring and the insulation, which was vaporized, is now deposited all over the walls of the station in about two hundred atomic thicknesses. The latter is the worst, I think. That means that every single relay contact in the place has got to be



gone over with trichlorethylene and a five-hundred-point file."

"O.K., Bob. Send Tiny Hanson over with Carlson and we'll send him back with the alphas. Need anything else?"

"Might send something that'll either precipitate or absorb the smell of insulation. The whole joint stinks."

"Cheer up," said McBride. "Think of how it would stink if we were using rubber like the old boys did. That, Bob, would really make your eyes water! No, I haven't anything here that you

haven't there. It'll go away as the atmosphere clarifier takes up the impurities. Better keep a close watch on the filter screens, though, or you'll get the system fouled and the atmosphere will not be cleared."

"O.K. We're about to start right now. Tiny will be over in just as long as it takes to go around the lens."

"Wait a minute! Cut across, Bob. After all, the lens is down, and we needn't worry about crossing direct."

The phone rang again. McBride picked it up and bellowed: "Hello!"

"Dr. McBride? This is Charles Holloway."

McBride swallowed. Holloway was the planet governor at Pluto. "Yes?" he said in a quieter tone.

"You are aware that Pluto is without his artificial sun?"

"We are also aware that the lens system is without power for some

stations, without space-warping equipment for others, and without personnel for still others. There may even be a few in which any combination of the three vital factors in mathematical permutation may be applied. If you're looking for encouragement, grasp this straw: We're working like a pack of fools to re-instate the lens. And if you care for my advice, I'd suggest that you issue orders that the lens-to-planet telephone be restricted to calls made from Station 1. We might need something in a tearing hurry."

"I shall issue such orders," promised Holloway. "I have also been informed by the astrophysicists that Pluto will lose about two degrees per hour until the lens is re-instated. There is still a lot of very cold material down in the interior of the planet, they say, and it will tend to draw heat from the surface. You know how the heat gradient is from midnight to noon."

"I understand," said McBride. "But we're not sitting around contemplating the temperature on Pluto, or calculating how soon it will be before you can go ice skating on the River Styx. Good-by!"

John's sense of humor asserted itself, and he picked up a cryptic little card that said: "Do Not Disturb" and hung it over the telephone. He picked up the other phone, and called Station 6.

The telephone rang endlessly at the other end, and McBride cursed. After ten minutes of solid ringing, McBride hung up in futility. "Tommy," he yelled, and a young

man came running. "Tommy," he said, get the number two flitter hot. You and I are going to go over to 6!"

Tommy left, and McBride called Station 8. The answer was prompt. "Look, Jimmy, 6 doesn't answer. You send a couple of your men over—not your best, but a couple that you can spare. I'm going to call 4 and get Jud to send a couple of his assistant specialists over, too. I'll be over myself as soon as I can get there; but it will be a long haul for me. It's near the full diameter of the lens, and twenty-two million miles is no stone's throw."

"O.K.," said Jimmy Allen. "Too bad about this charge business or you could call 5 and 7."

"I know. It's bad enough that I have to change charge to get from 1 to 6, but I'll have enough time to do it, coming from here. Are you on?"

"Sure. We're not in too bad a shape. Mostly ruined wiring and welded relays. The alphasatron is still in fine shape, and the space-warp generator can still do a job. As soon as we get cooking again, I'd suggest a replacement, but the darned thing will hold up fine for a few weeks until we have time and a breathing spell."

"O.K., on the way!"

"Right, boss!"

McBride's next call was to 4. "Jud," he said.

"Jud's nursing a set of busted arms," came the disconsolate answer. "This is Pete Jackson."

"How bad is Jud?"

"Conscious, and madder than the

devil. He can't even hold the phone, you know, and so I'm acting as his mouthpiece."

"How's the station?"

"Mostly a mess of secondary damage, but it is pretty widespread. Everything in the place caught hell, including the typewriter in the office, which fell off the desk. Got a space-warp generator?"

"Yup, but can you repair yours?"

"I think so."

"Then take a stab at it. I've only got three replacements, and there may be more than that blown out completely. All the results aren't in yet."

"O.K., and we'll make repair right up to the point where we need the generator anyway, whether we can repair ours or not. Then if we need it, all we have to do is to hand it in and hook it up."

"Fine, Pete. Now look, 6 doesn't answer. Send Timkins out there with Joyce. Must be pretty bad."

"O.K., boss. We're on our way."

At Tommy's call, McBride went to the big air lock and the flutter took off for 6. As they went, McBride operated the generator that reversed their charge so that they could land on 6 without difficulty. Halfway across the lens, the telephone in the flutter rang, and McBride dropped the generator controls and picked up the instrument. "John," came the voice, "this is Hastings, on 10. A space ship just came limping into the station, falling free. We slung

out a line and caught it. We cut her open and found the dame that was the cause of all this. What shall I do now?"

"My better instincts say to slug her. The stuff I was taught at my mother's knee says to spare the violence. Keep her there until I get finished at 6."

"She insists on going to the main office."

"Y'might let her," said McBride thoughtfully, his voice slightly sour with distaste.

"Gosh, boss, you can't do that."

"I know. Well, she can't get out of the lock without your assistance. Unless I'm mistaken, all of you are far too busy to bother with a headstrong female."

The phone was silent for a few seconds, and the sounds of a light scuffle came over the line. Then a cool contralto came.

"I'm Sandra Drake," it said with a world of impertinence. "No man is going to tell me where I can't go!"

"Sister," snapped McBride, "you keep that up and we'll jolly well tell you where you *can* go!" McBride hung up and redoubled his efforts on the charge-reversal generator. "Women," he snarled, twisting the generator controls as though he had the Drake woman by the throat.

Ten minutes before they landed at 6, McBride picked up the phone and called 1. He spoke to his apartment. "Hello Enid," he said.

"John! What's all the shouting about?"

"La Drake tried to run her crate

through the lens. She broke it."

"Who's la Drake?"

"Some dame. Look, Enid, what do you do to handle a headstrong female? Besides giving her enough rope to commit self-destruction?"

"What's her purpose in life?" asked Enid McBride.

"Proving that men are inferior animals."

"I won't answer that one," chuckled McBride's wife. "Look, John, where is this man-killer?"

"At 10."

"That's negative, isn't it?"

"Bright woman, yes," laughed McBride.

"Well, I'm no space-warp expert. How would I know?"

"Look, dear," said McBride patiently, "you divide them by two, as I've said before a million times, and if they come out with nothing left over, they're negative."

"But we're on 1—and you can't even divide one by two—"

"I know. One's positive anyway, Enid. Look, kiddo, leave things like screwdrivers and voltmeters and calipers to me and you continue with the can opener as your only tool. What are we going to do to Drake?"

"You stop on your way back and pick her up. I'll take care of Drake. What did you say her first name was?"

"I didn't, but it's Sandra."

"Oh! You mean Sandra Drake, the novelist-adventuress?"

"I mean Sandra Drake, the she, space-barnacle on the hull of progress."

"Oh, I've heard of her. And, John, I'll take care of her!"

"O.K., Enid. I'll see you when I get there."

"By."

Six was as silent as the proverbial tomb. They breached the lock from the outside and went in slowly, to find the station a shambles. Fred Atlock, the superintendent of 6, they found after some search. He was unconscious, suffering from superficial shock, and he had a four-inch cut on his shoulder which was slowly seeping blood from a large clot. Dan Wilkins, the only other man on that station, they discovered in the generator room, clinging speechlessly to the output terminals of the alphantronic power supply. McBride cut the switch, which was one of the few that hadn't welded shut, and the generator stopped immediately, permitting Wilkins to free himself. "Great Lord," he gasped. "I've been sitting there for nine years!"

"By actual count, it's been one hour and twenty-three minutes," McBride told him. "How do you feel?"

"O.K.," said Wilkins in a matter-of-fact tone, and with a slight eyebrow-raising look of surprise on his face that anyone should ask. "After all, anything under twelve hundred alphons merely paralyzes all of the voluntary muscles. The involuntary muscles are as good as gold up to that figure. I just feel a little stiff, like I'd been sitting in one position for an hour and better

—which I have. I did everything but explode when that phone rang, but I couldn't will myself loose. When you're across one of those things, you can't even wink an eye at will, but must wait until the involuntary nervous system winks it for you. And, funny thing, you can't even stop your own breath; you just go on breathing automatically, since that's what the involuntary system demands."

"O.K. Where's the gang from 4 and 8?"

"I dunno. Are they coming?"

"Coming? I thought they were here by now."

McBride found the telephone and called 8. "Jimmy? Where is that gang you were going to send to 6?"

"Sorry, Mac," answered Jimmy. "They were needed here to do a heavy job, and so I kept them for a bit. They're on their way now."

"O.K., as long as they're on their way."

McBride's call to 4 was less productive. "Pete? Where is your crowd for 6?"

"Can't send more than one," returned Pete. "Still want him?"

"Why didn't you contact me?"

"Line was busy."

"O.K., send one man. The gang at 6 was indisposed, that's all, and Dan can work now. Fred is going to be out of commission for the duration, but he can still direct as soon as we get him patched."

To Wilkins, he said: "Dan, we're going to trot. There'll be help out here soon. Tommy and I are needed on 10."

The flitter took off again and began to cross the lens for 10.

Allison, at 2, called and said: "McBride? Good news. Two and 3 are ready for service."

"Swell," said McBride. "Now look, call the stations and ask who needs help. You and Fellowes go out and assist."

"Right."

McBride hung up the phone, and it rang almost immediately.

"Mac? This is Caldwell."

"Yes, Doc?"

"Look, Carlson is in bad shape."

"Can you jack him up? Not now, but say in three hours?"

"Probably, but not more than a few minutes. He'd be better in twenty-four hours."

"Gad, Doc, Pluto'll be forty-eight degrees colder in that time! Knock forty-eight degrees off of the temperature on any planet, and you'll probably knock the whole thing for a loop. Better patch him up, Doc, because he's one of the mainsprings that'll be needed when we're about to restore the lens."

"O.K.—and say, John, you don't mind my making a hospital out of your lab?"

"Go ahead. How's the casualty situation?"

"Nothing fatal. Mostly an assortment of cuts, bruises, fractures, and shock. I've been checking the stations, and we've been calling all bad injuries in here for treatment. Takes a little longer, but I can keep my eye on more men if they come than I could if I went traveling. Never can tell what'll happen."

"Have you contacted the after stations? They got a shaking up, but I don't believe that it was anything compared to the fore element stations."

"No, most of the trouble in the back was due to being hit by slowly moving objects of high inertia. They're mostly annoyed, back there. The front system got it, though, what with flying spots of molten metal, electrical discharges that convulsed muscles, and burns from the alphas when they went load-free. A few of the boys got hurt when the mechano-gravitic generators collected the full load of the power sources and let them have anything from 10 to 15-G until the gravity-switches cut out. That did more than haul the men to the floor; it also hauled a lot of what would have been light stuff down on top of them at weights from ten to fifteen times normal. That's what hurt the most of them."

"What fell, mostly?"

"Light fixtures, and ceiling equipment. The busbar hangers on 7 gave way and dropped a bus line on one fellow, breaking both legs. Eleven's mechano-gravitic generator misfocused and hauled everything slaunchwise into a corner of every room. The men picked themselves out of a pile of material; everything from loose generators to odds and ends of wire. The latter didn't hurt, but the heavy machinery did."

"Fine business, Doc. Keep 'em patched!"

"That's my business," said Cald-

well. McBride could hear him muttering as the doctor hung up.

McBride's flitter landed at 10, and inside of the lock, he was met by a picturesque red-headed woman of extreme beauty. There was green fire in her eyes, and her anger possibly made her more beautiful. McBride took everything from her expensively-shod feet to her exquisitely coiffed hair in one sweeping glance and decided immediately that it was a shame that a woman like Sandra Drake should have been a stinker.

"Mr. McBride, I assume?" she said in that contralto voice.

"Dr. McBride," he corrected, standing upon his dignity for the first time in seven years.

"Doctor?" said Sandra scornfully. "Doctor of what?"

"Doctor of Philosophy, major in sublevel energies including the gravitic spectrums; electro, magnetic, and mechanical. Master of Mathematics, Bachelor of Arts, and Doctor of Language and Literature Honorary. Is that sufficient weight to gain me a modicum of respect?"

"I have no respect for someone who stands in my way!"

"I see that. Nor anything, either. Do you know what stopped you?"

"No, but—"

"Your precious Dr. Holmann is an old goat who is still living in the past. But even he should have known that you can't ram a spaceship made of cupralum alloy through a magneto-gravitic space warp. Permalloy, or alnico, or

anything diamagnetic will zip through such a warp and pick up velocity on the way—probably enough in this case to crush you flat against the bottom of your ship. But a paramagnetic alloy such as cupralum has about as much penetrative power as a forty-five caliber slub of wet soap against tungsten-carballoy. But at your velocity, not only did you stop in something short of nothing flat—God knows what your deceleration added up to—but you fractured the space warp, too.”

“A man will do anything to prove his point,” snapped Sandra. “And I have no doubt that you would do anything, too. What did you use on the *Lady Luck*?”

“Nothing.”

“I don’t believe you.”

“I don’t give a care! You want to go to Station 1? Then come along!”

“You lead in your ship, I’ll drive the *Lady Luck*,” said Sandra.

“Not on your life. You’re going to leave the *Lady Luck* right here.”

“I don’t see why—or do you intend to steal my ship?”

McBride gritted his teeth. “Look, beautiful and senseless. This is Station 10. It is electronegative. One is electropositive. You haven’t got a charge-reversal generator in that crate of yours, because I know darned well that the only place where they have ’em is right here in the lens itself. It’s the only place they’re needed. Now, Miss Drake, the lens is twenty-two million miles in diameter. It is that size because a disk of that diameter

subtends the same arc as the sun does when viewed from Terra. Since the lens is situated halfway between Sol and Pluto, the magnification amounts to the projection of the sun on Pluto equal to the sun on Terra. Or don’t you understand the simpler mathematics of optical systems?”

“Now, out across six and a half million miles of space, from here, are Stations 9 and 1, both electropositive. It so happens, Miss Sandra Drake, that if the density of matter in space were as high as the atmosphere of Terra at twenty thousand feet, the difference in charge between Station 9 and this one, 10, would be high enough to cause an ionization discharge! Now put that in that jade cigarette holder and choke on it! Can you possibly—is that microscopic mind of yours large enough—conceive of the effect upon contact? Sister, you’d not only be electrocuted, but you’d light up the sky with the electronic explosion to a degree that would make some Sirian astronomer think that there was a supernova right in his back yard. Now quit acting like the spoiled brat you are, and come along.”

“Nice, high-sounding, technical words,” sniffed the red-headed girl. “I presume that you have such a thing in that little can of yours? I mean something that will change the charge on it while in flight?”

“I wouldn’t have survived the first crossing if I hadn’t,” snapped McBride.

“And pray tell, how do you detect the change in the electronic

charge from within?"

"The electronic charge is so great that a heavy active atom such as bromine will, under the positive charge, lose enough of the outer ring electrons as to inhibit the formation of the more complex atoms, while under the negative charge there will be such an excess of electrons that a heavy element of the zero group, such as xenon will actually be forced to accept an additional planetary electron and will then combine with some of the more active elements. So when xenon bromide forms, we know we're highly electronegative, while the chemical dissolution of tetrachlorodibromomethane indicates a hellishly high positive charge. When we approach the station, we use a little gadget known as an electrostatic gradient indicator which is useful over short distances, and with which we adjust our charge-difference to a sane value. Pluto and the solar system in general can thank their stars that the carbon-chain molecules that go into the human system are stable enough to resist dissolution. We are able to maintain the lens on less than enough charge to kill us all, though the boys in the odd-numbered stations report a lower metabolism than those in the even numbered ones."

McBride paused. "And if you're worried about that space-warp-wrecked can of yours, I'll be more than glad to give you a receipt for it. Coming? I've got to go."

Sandra Drake was still skeptical, but she followed in spite of it.

John McBride was met at the space lock of Station 1 by one of the lesser casualties from 3, Douglas Whitlock. McBride said: "How's the arm, Doug?"

"Broken, but on the mend. Doc will put a stader on it in a couple of days and I'll be able to use it again."

"How's 3?"

"Not too bad. But, brother, there's a million miles of loose wire floating around the place. Tonk and Harry are rewinding the alphas-tron leader-coils which developed a shorted turn down near the core."

"How are they doing that?" asked McBride.

"It was tricky, all right. And this'll slay you. They're using the nine-inch lathe!"

"Huh?" McBride was thunder-struck.

"Well, as Tonky said, it was an emergency. So they used the acetylene torch to cut the lathe bed off right before the headstock. They moved the rest of the bed back about twelve feet and welded it to one wall of the room. Now, there's room to get that big core in the lathe. The lathe is ruined, of course, or rather the bed is, but the alphas-tron will be ticking them off in another couple of hours." Whitlock looked at the girl and asked McBride: "Where did you find her?"

"This," said McBride, "is Miss Sandra Drake."

"Oh yes," said Whitlock brightly, "Drake, the human cannon ball . . . or is it screwball?"

"And what happened to you?"

asked Sandra caustically. "Did you step into an open port in the dark?"

"Frankly, I was hit by a falling busbar—"

"Probably the real cause of this whole failure."

There was fire and blood in Whitlock's eye as he looked at Sandra Drake. Actual bloodshed was averted by a very scant margin when Enid McBride entered and stepped before Sandra, cutting off any attempt of Whitlock's to advance upon the red-headed female with intent to inflict damage.

Enid McBride was three or four years older than the other woman, and it must be reluctantly admitted that she was not the four-alarm all-out beauty that was capable of matching looks with Sandra. On the other—and most important—hand, Enid had the ability to make men and women like her; in her less boistrous way, Enid's charm and personality made itself felt even before she spoke to Sandra.

"You're needed," she told Sandra quietly.

"For what?" asked the Drake girl, and her cool contralto sounded scratchy in contrast.

"We've a number of hurt men here and we need help. You're elected."

"I've never helped a man in my life."

"You are getting no younger," said Enid with a short laugh. "I'd say it was about time you started."

"Oh men!"

Enid looked at McBride, and with that almost telepathy that

seems to exist between husband and wife, John understood that he was to leave this to Enid. He thought with a smile: Enid's smaller, but I'll bet she packs a better wallop! Then he motioned to Whitlock, and they left as Enid said: "You're a complete washout, my dear, and your not knowing that makes you even more complete. Why don't you get smart?"

"Are you trying to tell me how to manage my life?"

"It's time someone did. Obviously you aren't capable of managing it."

"I do all right."

"Nuts. If this is a sample of your brilliance, I say, 'bring back the good old days!' Look, Sandra, what are you trying to prove?"

"That I'm as good as any man."

"Spinach. Ask any man and he'll probably admit it. What you're trying to prove is that you're better than all men, isn't that it?"

"Well—"

"And since you are superior to men, no doubt you'd prefer legal protection for them—marriage laws designed to assist and protect the weaker and inferior male; labor restrictions so that grasping women may not take advantage of them; protection so that avaricious women will not be able to take advantage of his lesser experience?"

"Why that's ridiculous!"

"Is it? A few hundred years ago, men set up such laws to protect women because they realized that there were among their own sex, men who would think nothing of taking advantage of an unwary



woman. As soon as the women decided that they were equals, men reluctantly removed that protection. Now, Sandra, if you are equal or superior to men, you should be civic-minded enough to want to protect the weaker."

"Bah! You talk like a man!"

"Nonsense. I'd scream like a stuck pig if any man decided that I couldn't take care of myself. But I have enough sense to realize that all of the courtesies that men offer

me are tokens of their affection and not gestures toward someone who cannot get in out of the rain without help. As for the weak, what would you say to a man who slugged a woman and then ran off and left her to suffer?"

"He's a rat!"

"How about the dame who does the same to a man?"

"That's—"

"Be careful, Sandra Drake. The girl I'm speaking of is you!"

"Well—" Sandra let the sentence die in midstream.

"Think it over, lady wrestler. And when you make up your mind, come on in and help."

Enid left Sandra standing in the room. She went to the improvised hospital and began to work. Her touch was gentle, but within her, Enid burned. To Enid, Sandra Drake was as representative of the female sex as poison ivy is representative of the plant family.

John McBride faced the men in his office. "Give it to me in rotation," he said. "Starting with Station 1."

"We're down to the ruined relays and a few hundred feet of burned cable. A half hour with help."

"Two is running O.K. on test power. She can stand a little sprucing, but that can wait."

"Three is ready for test power, or will be within the next ten minutes or so."

"Four will be O.K. as soon as we get the space-warp generator tuned. We managed to repair the input circuits."

"Five is running on test power."

"Six is ditto."

"Seven is still cleaning up some of the mess, but can go on test power as soon as the time is ripe."

"Eight is O.K. except for some burned cable and some messiness. We never were in really bad shape."

"We're still cleaning relay contacts with files. Take another hour at least, and we've got so much

help that the boys on the upper panels are standing on the shoulders of the men working on the lower panels. Also, they're so close together that they need a hor-tator to beat time so their elbows won't clash. That's how we stand on 9."

"Ten's in shape for test."

"Eleven needs a new alpha-tron, which is being hooked into place right now."

"Twelve is ready to go on test, according to Ben, who called just before you came."

McBride smiled wearily. "That's the fore element," he said. They tell me that the rear element is all ready and waiting. So all we need now is Carlson. Give orders to have the propulsion operators start aligning their stations. And get me Doc Caldwell."

The phone rang and McBride picked it up. "This is Doc," said the man on the other end. "Look, Mac, can you come over to my office?"

"Sure," answered McBride. To the men in the room, he said: "Fight it out among you. Give help to any station that still needs it. We're going back in service as soon as we can—in an hour, I'd estimate. That's if Carlson is capable of handling his end."

McBride went to Doc's office. Caldwell smiled bleakly. "He's conscious. He insists on talking to you."

"Is he O.K.?"

"He's weak, but he'll be all right for a few minutes."

"Look, Doc, I don't want to kill

anybody by making him work when he's likely to keel over, but we need Carlson if we ever needed any man. Darn it, why are there so very few men with supersensitive balance?"

"It's hereditary, and the human race is still mongrel by its own law," said Doc with a smile. "By which I mean that it is illegal to marry your own brother—or sister."

McBride laughed, and then went in to see Carlson.

"Carl," said McBride, "how do you feel?"

"Wobbly."

"How wobbly?"

"Not too bad. How're things?"

"We've been running around like waltzing mice for the past few hours, but we'll be ready for business in a few hours."

"I'll be needed."

"In an hour."

"I'll be up."

"He'll be up," said Doc. "How long will he be needed?"

"Perhaps an hour."

"He won't be up that long."

"What can we do?"

"Get everything ready. If he can hold out, or if you can set things so that the warp can be established in a shorter time, we're in. You couldn't hold a partial warp for any length of time?"

"Not a chance. It's one of those yes or no things. You can't stand still while building a space warp. You must either build up or let fall."

"If you could use something less than perfect, supersensitive

balance, I could buck him up with a bit of dope and he'd last longer."

"Why not stand by with the needle? Or could you give him something that will wear off in a half hour and sort of increase that balance as the time passes—giving him the buck-up at the first and saving that strength for later?"

"Might work, but I sort of hate to take finely-cut chances like that," said Caldwell. "We'll try it!"

The last report was in, and all stations were ready and operating on test power. McBride spoke into the broadcast communicator, so that the superintendents of all stations could hear him simultaneously.

"Rear element, fore stations, set up primary warp."

Generators whined up the musical scale in the twelve stations that circled the junction between the fore and aft elements. Slowly and ponderously, the stations began to fall into a true plane, and as they began to align, the electro-gravitic generators began to work more efficiently.

Before the warp had started to form, McBride called: "Rear element, rear stations, set up secondary warp!"

The rearmost twelve began to fling their power across the circle, and the space between the two regular polygons began to take lenticular shape. As it formed, it thickened, and the massiveness of the space between the warps set the stations more firmly in place. They oscillated gently back and forth, in

a damped cycle and would be moving in gentler and smaller excursions for days before they came to total rest.

"Fore ring, set up magneto-gravitic warp!"

The heavy alphas began to fill the space between the fore stations with alpha particles. Circling in ever-decreasing spirals, the particles set up a super-powerful magnetic field parallel to the axis of the lens. As they reached the center of the lens, the alpha particles lost velocity and with their lost speed, they also lost their effect. They died out, and to all effects, disappeared.

The space between the electro-gravitic warp and the magneto-gravitic warp decreased as the fore warp thickened, and then with a sickening swell on the part of the stations themselves, the center of the fore warp touched the center of the aft warp.

Cohesion took place, and the fore warp, not completely formed, snapped back against the electro-gravitic warp, drawing the fore stations back a few miles with it. Their mass made them pass the point of balance, and then the overly-convex surface exerted pressure against the stations, and they moved forward into damped oscillation. The oscillation continued for four long, slow swings, and then McBride decided that they were stable enough for continued action.

"Doc," he yelled. "Get Carlson, take the surface flitter, and keep an

eye on him while he keeps an eye on the lens!"

Out across the fore surface of the magneto-gravitic warp went the surface flitter. Out across the firm surface of warped space went the flitter, running on the way of magnetic power where pseudo-gravity was made at will. It ran across the lens to the center, and Carlson seated himself in a stiff chair and put his head against a niche in the hard back. Before his mouth a microphone was placed, and every bit of motion was stopped in the flitter. Even the doctor sat quiet in order that he would not disturb Carlson's perfect balance.

"We're thick on the 5 edge," he said, and McBride turned and spoke to Station 5.

"Decrease alphas output," he said.

"Now about one quarter that amount on 6."

The adjustments were made, and Carlson's perfect balance told him whether or not the optical axis of the lens was correct by its pull upon the semicircular canals of his inner ear. A half hour passed, during which the power output of the various stations were adjusted, and after each adjustment, there was a period of waiting as the new output demanded a new positioning of the station to meet the curve of the lens. Then Carlson said, in a tired voice: "Mac, they're O.K., I think. Circle 'em!"

"How's he, Doc?" asked McBride.

"O.K., but weak. He'll last an-

other fifteen minutes."

"Make him rest for that time. We'll need him then."

McBride gave the signal, and the three rings began to rotate; the fore and aft rings going clockwise and the center ring moving in the opposite direction.

Then, fifteen minutes later, when the rings had gained their orbital velocity, Carlson resumed his post.

For ten minutes he sat stiffly in the chair, his eyes closed and his every nerve straining to catch imperfections in the thickness of the gravitic warps. He was the key to success, and he had no equal. For the strength of the pseudo-gravities and the power of the magnetic field that coupled with the fore element prevented any of the more intricate machinery from functioning. Only man, whose nervous system was not interrupted by magnetic fields, and whose chemistry and physical attributes were not overly disturbed by electronic charges, could have established the correction of the lens.

Carlson and Dr. Caldwell sat out in the center of a magneto-gravitic field that would have destroyed the finest of balance-mechanism, and above an electro-gravitic field that would have prevented the operation of an instrument sensitive enough to detect imperfections in gravitic alignment.

Always there would be men with Carlson's gift of super-perfect balance, and they would find their life

work in maintaining the life-giving lenticular warp in space.

Carlson slumped wearily in his chair and smiled tiredly. "O.K.," he said. Caldwell started the crude drive and the surface flitter started to cross the lens to Station 1.

On Pluto, the first sign of renewed life was a flash of light in the sky. It started as an expanding pinpoint and burst out over a quarter of the sky before it diminished to a safe value. The scintillating fingers that darted from the twelve-scalloped sun were still. Then, as the magneto-gravitic warp was established, the color of the sun changed slightly, as the compounded lens removed harmful radiations by controlled chromatic aberration. The size of pseudo-sol expanded and contracted, and then settled down to a familiar size. The long fingers of light, that were leakages through the interstices between the stations, began to change as the stations took up their orbital movement. Then the streamers began to spread outward from the sun, detaching themselves as they reached maximum length and dying as their inner ends crept out to meet the far extension of the streamer. Between them, other streamers started to grow.

The pattern became familiar, and the men and women of Pluto ceased to look at the wonder of their returned sun.

Then they returned to their everyday lives.

THE END.



Controller

by ERIC FRANK RUSSELL

The Japs respected American planes, battlewagons, and armies. But one American and a few island natives were of no importance. Quite so. But the American, as Americans will, had a gadget—

Illustrated by Orban

Eight squat barges chugged steadily through a convenient gap in the coral reef and into smoother water beyond. Their motion was as ponderous as it was ominous. Each lumbered along with a broad

bow wave creaming at its front and left behind a wide, languid wash. Two fathoms down, the spider crabs scuttled for shelter as long, rectangular shadows passed above.

There were contrast ahead and astern; scenes of the world that used to be and the world that now is. Before the approaching barges lay a strip of silver sand and a feathery jungle surmounted by steamy, sunlit haze, the whole forming a characteristic view of a small Polynesian island. Behind, perhaps a couple of nautical miles away, wallowed the low-slung, gray shapes of several ships of war. There were six of these four destroyers, a small aircraft carrier, and one armed merchantman of medium tonnage.

Reaching the greeny shallows, the barges dropped their forward ends which became gangways to the beach. Fifty armed men poured from each of five barges. The sixth discharged two light field guns, several mortars, and their crews. The seventh released a squad of technicians, a portable radio transmitter-receiver, and many cases of supplies. The last unloaded a wheeled gasoline reservoir, a tiny gas-buggy with absurdly big tires, and three light tanks.

One of the armed men solemnly stuck into the smooth, warm sand a stick bearing a white flag with a red disk in its middle. He was a small, craggy individual with black, bristly hair, a brown skin, and a thin, closely clipped mustache. Under the crutch of his right arm he held a semiautomatic rifle. All of his fellows were small men with skins equally brown. Most of them held similar rifles.

Spitting on the sand, a brown

man glanced toward the silent vegetation, and said, "What, no white garbage?"

An officer stared at him coldly, and snapped, "Be quiet!"

Overheard, a V-shaped flight of small, flimsy planes hummed high through the cloudless sky. The three tanks crawled up the beach. They were noisy, their tracks clanked, they exuded a stink of hot oil, and they left deep, ribbed weals in the silver sand. Another plane appeared, a loutish amphibian. It swung low, dropped two flares, both red. The jungle brooded and the sea slopped indifferently upon the shore.

On the beach, the swart commanding officer, Lieutenant Colonel Hosuke Hashimoto, barked a series of orders. The invaders deployed with soulless efficiency. One hundred guarded the beach along with the stores and technicians. Fifty probed the verge of the jungle. Fifty took possession of the strategic headland overlooking the little bay.

The remaining fifty, led by Hashimoto and one tank, struck along the only path running from the bay into the interior. Within ten minutes of their going a shot rang out in the depths of the growths and somebody emitted a yelp of agony. Those on the beach took no notice. The barges raised their gangways, backed offshore, turned clumsily around and pounded toward the distant ships. The flight of planes came back, circled their parent carrier. The jungle still brooded.

Here, in what was approximately the geographical center of the island, stood somebody's ideal home. Or it looked as if it fitted an individual notion of an ideal home. The house was well-built, solid and spacious. It stood on a slight elevation in the middle of a clearing around which lay cultivated fields and neat, tidy gardens. To one side posed a group of native huts.

Perhaps the house had three unusual features. Its very nature, its size and solidity, were distinctly out of place on this lonely island. On either side of it stood a trellis mast and, between the two, hung a radio antenna. Before the house rose a long, white pole topped with a limp, unwavering flag. The flag was decorated with stars and stripes.

From the open turret of his tank Hashimoto stared impassively at the house. Without a doubt, this was the place. He noted the dangling flag and sniffed with disdain, his face still blank. Then he nudged his driver's shoulder with the toe of his boot; the tank jerked forward, rumbled into the clearing. Fifty little brown-skinned men trotted behind in an orderly column.

A couple of dozen yards from the front door the tank stopped and Hashimoto clambered out. A few tall, lithe natives emerged shadowlike from their huts, looked lackadaisically upon the warlike scene. Ignoring them, Hashimoto drew a long-snouted automatic pistol, approached the door. He was backed up by a hairy, apelike ser-

geant and two boyish riflemen. The rest of the force surrounded the house. The tank stayed where it was, its heavy caliber machine gun covering the upstairs rooms.

Hashimoto kicked imperiously upon the door. He waited no more than ten seconds then signed to one of the riflemen. That worthy reversed his weapon, used the butt to batter energetically on the door's middle panel. The uproar resounded throughout the house and brought results. Footsteps sounded hurriedly inside, the door swung open, a white-haired, white-skinned little wisp of a man stood blinking in the sunlight.

Slowly the oldster's pale blue eyes took in the tank, Hashimoto's escort and, finally, the weapon in Hashimoto's hand.

He said, "Good gracious!"

With exaggerated politeness, and in perfect English, Hashimoto asked, "You are Willmer Jackson?"

"Yes."

"You are my prisoner."

"Prisoner?" Willmer Jackson looked vaguely troubled. "I do not understand."

"Our countries are now at war," responded the Japanese, flatly. "We have been at war for more than a week." His black eyes studied the other carefully. "You knew nothing of this?" Jackson shook his head. "You have not heard of our victorious onslaught?" Again Jackson signified ignorance. Hashimoto grinned, gestured toward the radio antenna, and said, very curtly, "Like all your compatriots, you are

devoid of honor. You are an unhesitating liar."

Jackson's aged face took on hard lines. "I am not in the habit of telling untruths. Let me warn you right now—"

"Cease talking and get inside." Hashimoto thrust him into the house, following with his escort.

Outside, the small group of on-looking natives continued to advertise their complete noncombativeness. A Nipponese trooper went to the pole and pulled down the flag. Carefully, he fixed the flag of the Rising Sun to the cord, hauled it to the top where it hung just as limp and unwaving as had its predecessor. A kingfisher screeched derisively from the sanctuary of the nearest growths. The trooper laughed to himself, blew his nose on the rival bunting, threw it away. A few of his comrades laughed with him, hollowly. The kingfisher screeched again.

Within the house, Lieutenant Colonel Hashimoto seated himself, proceeded to cross-examine his captive.

"You are an eccentric multimillionaire?"

"Nonsense!" denied Jackson. "I do not consider myself eccentric. Neither am I a multimillionaire. I am, I admit, a fairly wealthy man, but that is all."

"It is enough. We know much concerning you. Five years ago you purchased this small island, had this house built, and imported a few Society Islanders—why?"

"I was tired. My day was done.

I could afford what I wanted, and what I wanted was something like this. I have built my personal paradise."

"Now it is ours, *tut-tut!*" Hashimoto permitted himself a sardonic sigh. "How upsetting are the whims of destiny."

"As you're due to discover," snapped Jackson, now irate.

The Japanese sat upright, said, slowly, "Are you daring to threaten me?" His eyes narrowed still further. "You are old, and old men should at least have learned discretion. It would be far better if you said much less and showed willingness to do a great deal more. I have it on good authority that you are a scientist engaged on potent research. You will, therefore, give us the benefit of your work. You will do this willingly and with alacrity, for the sake of the New Order in Great Asia, and"—he made the pause a telling one—"for the sake of your own good."

"Your information is blatant nonsense," declared Jackson. He passed a thin hand over his white hair as if already tired of the discussion. "I am a retired manufacturer of marine engines, but my lifetime's hobby has been radio. I continue to indulge it here. The world of science has not even heard of me." Again he waxed truculent. "As for helping you discolored monkeys, I'd as soon be midwife to hogs."

"You stupid old fool!" Hashimoto stood up, hitched his sword aside with a fitch of impatience. "You have much to learn as has the

rest of your yapping race. You will learn, for instance, that a lazy body and a wagging tongue can both be treated by very effective methods. If necessary, you will receive such treatment."

"Such things are contrary to the rules of war," said Jackson, his pale eyes growing bleak.

"Contrary to nothing," rasped Hashimoto. He rattled his sword as if the sound gave his words conviction. "In this place we are not functioning beneath the inquisitive noses of neutral correspondents. Neither are we within reach of any of the so-called forces of your bragging nation. On this island, we are alone. You will do precisely what you are told and you will do it very, very eagerly." He turned to the two riflemen. "Search the house."

Dumbly, the pair tramped out of the room. Their jackboots thudded along passages and through other rooms. Doors banged carelessly behind them as they clumped around the house. Meanwhile, the swart sergeant stood and glowered at the silent captive while Hashimoto ripped open a desk and raked through its contents. The former's search was thorough and savage. The latter exuded a stench of dried sweat and very bad tobacco.

The searcher suddenly clucked with his tongue, threw a mass of papers onto the table. "Letters from instrument makers, letters from radio technicians, drawings and circuits and plans. Just a hobby, eh?"

"Prove otherwise!" challenged

Jackson. Averting his gaze, he stared out of the window, noted the small, armed group laughing and talking near the base of his flagpole. Two of the men were wearing mock-orange blossoms in their sloppy cloth caps. A pair of frigate birds were winging away above the breadfruit trees.

Before Hashimoto could voice his retort, the pair of exploring troopers returned. One of them jabbered to his commanding officer, waved a lean, brown hand to indicate the back of the house.

"Hm-m-m, a laboratory. We shall have to see this." Hashimoto signed to the disinterested Jackson. "Come—you will explain." With that, he led the way, Jackson trailing him, the sergeant going last.

The laboratory proved to be a long, narrow room with a bench running the full length of the windowed side. Along the bench was scattered an untidy array of tools, meters, and pieces of apparatus. Many of the latter objects were of simple design even to the eye of a layman; some quite obviously were junk. But nowhere in the whole area of that room was anything remotely resembling a complete radio transmitter or receiver.

"See," said Jackson, quietly. "Evidence of my pastime. Gain from it what you can."

Hashimoto frowned, thought deeply for a while. He came to a decision and, when he spoke, he smeared his hard face with fake benevolence.

"This is the only island in these

parts which has neither a lagoon nor a mountain. It is of strategic importance, and upon it we shall construct an airfield. We shall convert it into an anchored carrier of aircraft." He looked at his listener, tried to plaster the benevolence more thickly. "Therefore I have made up my mind. We have nothing to fear from one lonely old man, and you could not escape even if you wished. You are free to go. You will find yourself a native hut as sleeping quarters, and will report to me in this house at sunrise and sunset every day."

"But—"

"Do not argue," warned the Japanese; his soothing look suddenly dissolving from his features. "Be gone before I change my mind and rid myself of you forever."

"Very well." Willmer Jackson walked slowly from the room, just as slowly to the front door, and out into the sunlight. As he paced across the clearing toward the gardens the nearest brown-skinned soldiers watched him with slit-eyed curiosity. One of them made, in Japanese, a wisecrack which the victim could not understand. Another soldier cackled like an agitated parrot.

Inside the house, Hashimoto said to the sergeant, "We know that this stubborn ape has harnessed the race-tide in the gap of the northern reef, and his station, small though it be, supplies far more power than this one house needs. Appoint someone to find this station, trace the supply lines and discover where else they run. See also that the

white fool is followed, and that he who follows does not lose him."

Saluting, the sergeant went to the door, saw the white-haired figure walking stiffly but steadily along the right-hand path which led past the native huts. Summoning one of the loungers by the flagpole, he rattled brisk instructions. The trooper nodded, hefted his rifle, started along the right-hand path.

Pacing with the slow deliberation of a badly worried man, Jackson passed the huts. He was muttering aloud, but his blue eyes did not so much as glance at the listening natives still standing in the shadows. His brow creased, his face abstract, he moved onward to the deep glade which led through the forest to the sea. A fairy tern called somewhere far away. Oleanders had dropped tired petals in his path and the scent of frangipani was cloying in the air.

Forty yards behind him the Japanese prowler slunk carefully beneath the trees. His black eyes were watchful, alert, his automatic weapon was ready in his hand. Thirty yards behind him a tall, broad-chested native snaked cautiously from the shadows of the huts, moved in swift silence on bare, athletic feet, and followed the Japanese.

Each as quiet as the other two, the three came to the deepest part of the forest halfway between the house and the sea, and here the native broke into a pantherish lope that ended in a spring. There came no sound of a shot, not a gasp, not even a choking gurgle. For part

of a minute there was only a frantic thumping of jackboots and the rustle of a million leaves. Then the boots ceased their agonized beat and the leaves rustled on.

It took half an hour to reach the tiny village on the southern peninsula and here, from his coastal vantage point, Jackson could see the ships of war lying a couple of miles off the midpart of the island.

Turning, he said to his native companion, "Is he still silent?"

The native's great muscles bulged as he gave a jerk to the limp, uniformed body tossed over one broad shoulder. "He is still silent, Cloud-head."

"Good." Musing the ambiguity of his name, Cloud-head, the cognomen given him by an innocent and poetic people, he entered the village. He answered the polite, "*Ia ora na!*" given him by a passing inhabitant, noted that the sun was beginning to set. Then he made for the biggest hut and went inside.

"Opeta," he said, "see, I am now as an outcast among men."

"The twilight crawls upon the land and the wind bears strange odors from the sea"—Opeta pushed forward a full shell—"but here is comfort for the belly of such as thee."

"Thanks!" Willmer Jackson raised the shell and drank. "As I passed the huts of the mirror-men," he said, "I called to Teaea in a voice that he heard, and he came with me in my steps. Another had followed through the trees and

Teaea carried him hither like a stricken boar. I would not make your home stink with this foreign one's presence."

"Indeed the shape of Teaea is mighty," commented Opeta. He bent forward. He was a middle-aged, burly Polynesian, on the verge of running to fat. He had iron-gray hair, and his dark eyes were keen, intelligent. "There is a roof for you here, Cloud-head. There are also hands which are yours."

"It is good of you, Opeta," Jackson murmured.

"And you will use this little yellow pig down in the Cave of Lightnings?"

"That was my idea."

"It is good. He shall be borne there while in his slumber." He gave a loud yell, volleyed instructions to the pair of natives who responded. The two snatched the still unconscious body of the Japanese trooper, carried it at fast pace from the village.

Jackson went to the entrance of the hut, said, "Teaea, you will return. At the setting of tomorrow's sun you will meet me by the great-tree-which-is-dead, and there you will tell me of all you have heard and seen up by the house."

"I will meet you," answered Teaea, simply. He departed at an easy trot.

Going back into the hut, Jackson seated himself. "Opeta, within short time these little pigs will arrive. They will explore the whole of Raiatea and some of them are certain to come here very soon."

He waited for the other's reaction.

"Let them come." Opeta let out a contemptuous snort. "They will speak and I shall not understand their talk. I shall be a son of *vævac*, the swollen moon, and of all the foolish none shall be more stupid than me."

"Hah!" said Jackson, smiling thinly.

"All the *vahines* here shall be old and fat," went on Opeta, waxing enthusiastic, "and the softness of their bodies shall be like that of *to'a auau*, the wave-swept corral." He sighed as if regretting his ability to produce such charmers. "As for the old one in the great stone house, I shall know nothing of him except that he is mad."

"These things are wise," approved Jackson.

"They shall be more than wise," promised Opeta, scowling. "In the early hours Hinoe encountered these barbarians marching up a glade. He ran, thinking to warn you. They blew a hole in his back and his spirit now cries like the running waters." His scowl grew deeper. "Hinoe was a sweet youth, modest and fleet of foot. You and I shall give him peace."

"I swear it!" Jackson promised, suddenly filled with anger.

"*Inu i te ota no te!*—A health to you!" Opeta quaffed irefully from his shell. "Come, Cloud-head, you to your task and I to mine!"

With that, the two went out, found night creeping across the sky like a monster roller shutter.

It required a full hour of fast walking to bring Jackson to the

imaginatively named Cave of Lightnings. To reach it he had to follow the western coast of the island almost up to the north point, making his way by the light of the crescent moon and the supernally brilliant stars. But the route was a familiar one, he had a lanky youth named Aryuu for company, and the pair encountered no sentinels of the foe while on their way.

Four natives were waiting outside the entrance to the cave. Two were those who had taken away the body of the unconscious Japanese. The other two had also acquired a body. The first carcass was now alive, very much awake, and surly; the second was exceedingly dead.

The tallest of the natives nudged the corpse with a bare, hard-soled foot, said, "This one came here. He followed the metal lines from the place-where-the-waters-make-brightness. Malo found him and squashed his head."

"He turned to give battle," apologized Malo. "I smote him down, forgetting to weaken my arm."

Jackson inspected the body. It was that of another Japanese trooper, fully armed and equipped.

"Bad!" he murmured to himself. "This is bad. They know of the powerhouse and are actively suspicious. I shall have to move fast. I must strike before they do and settle with them once and for all!"

To Malo, the old hobbyist said, "Let one return to the-place-where-waters-make-brightness and keep watch. Let Aryuu run back to Opeta and warn him that a close

watch must be kept on the brown pigs both at the beach where they landed and anywhere else they may go."

"It shall be done," agreed Malo. He signed with his hand and Aryuu and another promptly faded into the darkness. "We shall rid ourselves of this dead one?"

"Yes—but first take his weapons. I shall need them."

While Malo departed with the corpse, Jackson entered the winding passage leading to the cave. Utter darkness swallowed him as he went deeper inside, the two remaining natives following with their unwilling captive. The entrance shrank behind them as they progressed until only a few of the lower-slung stars peered through its gap, then a bend in the passage cut off even their weak rays.

At this point, the prisoner began to struggle and curse. One of his madly jerking jackboots knocked a loose stone from the invisible wall. At the top of his voice he started to bellow. The steady *pad-pad* of the natives' feet paused for a moment, the Japanese abruptly changed his shouts to an excruciated yelp and ceased his writhing. The feet padded softly along the way again.

Another bend was turned, being felt for rather than seen. Then old Jackson put his hand to the wall, found a hidden stud, pressed it. At once a blaze of light sprang from the roof and poured its revealing beams over a scene that the cocksure Hashimoto would have given much to view.

This natural cave had been shaped and greatly enlarged by human hands. Tools had left their marks upon its walls. The place was big enough to hide a blimp. Stony sides and rugged roof proved that this was a real island, not a mere coral formation, despite its reefs, nor a volcanic souvenir. It was an island in its own right, the plateau atop a submarine mountain. Because of its hard rock, the shaping and wiring of this sanctuary had cost Jackson a very large sum. But it was ideal for his purpose.

In the center of the cave's smooth floor stood a monster assembly of apparatus which, at first sight, looked like a gigantic radio transceiver. It had great, water-cooled tubes, mighty inductances, tremendous condensers, and an array of minor parts numerous enough to confuse the eye. The most noteworthy feature of the whole layout was that it appeared to be an apparatus in duplicate: this bank of tubes here opposed that bank there, this inductive circuit matched that inductive circuit, this capacity coupling was the fellow of that capacity coupling.

Displaying the businesslike certitude of one performing a thoroughly familiar task, Jackson went to the great control board, pulled down a couple of knife switches. There came no answering hum from powerful generators—they were too far away for that—but the tubes lit up. He turned a small wheel valve and the sprinklers flooded the outer eases of the tubes.

The two natives watched all this



with the respectful air of those who have nothing to fear but fail to understand. The prisoner's attitude was a mixture of dull curiosity and ireful arrogance.

Jackson said to the captive, "Do you speak English?"

"Yes."

"Good! Very good! Very fortunate indeed!" He smiled with the relief of one who has lost some cause for worry. "How do you come to speak it?"

"I was nine years a steward with Nippon Yusen Kaisha on the American run." He bared buck

teeth in what he stupidly imagined was a menacing snarl. "So I know what your people are—just no-account white trash. We shall sweep them out of Asia. We shall rid the Pacific of all you foreign scum. We shall—"

"You talk too much," put in Jackson, stonily. He turned his attention to the waiting natives. "We will roast this *varo*. Put him in the oven."

Breaking into broad grins, the pair grabbed the Japanese, thrust him none too gently into a metal cabinet at one side of the great ap-

paratus. Dexterously, they attached his bonds to hooks and loops within the cabinet, thus keeping him on his feet, immobile and upright. His ammunition, which they'd taken from him, they carefully replaced in his pouches. Finally, they stood his automatic rifle beside him. The Jap said nothing. His eyes were evil and now more furtive.

Jackson gave him a quizzical examination, said, "I guess he's ready." Then he returned to the control board and moved the master switch. The massive apparatus sprang into action.

The heavenly tranquility of Lieutenant Colonel Hosuke Hashimoto was gravely disturbed. He stood splay-footed on the beach, frowned at an incoming barge bearing a score of little, brown marines. A passing trooper got his share of the august frown. So did a stalled tank and a row of four mortars.

He said to Captain Konura, "I am dissatisfied. Arrangements are not working smoothly."

"Naval co-operation has been without fault," declared Konura, sharply. As a navy hoodlum he wasn't going to take passes from any army hoodlum.

"I don't mean that," Hashimoto assured. "I am talking of land operations."

"Well, what has gone wrong?"

"Little things, but many," gloomed the other. "That cursed American has not reported to me as ordered. Patrols have sought him in vain. He cannot be found. The natives know nothing of him."

"Pah!" scoffed Konura. "Is the power of the Emperor to be thwarted by one senile American? Will the empire fall because this doddering fool goes loose? Forget him—his value is exaggerated and his abilities mean naught."

"That is not all," pursued Hashimoto, stiffly. "One man was sent to trace alternative lines from the power station. He did not return. I sent a second. Neither did he return. I sent a patrol of six. After a time, they came back and could give no satisfactory explanation for their slowness. They brought news of no value. They said they'd found another power supply and had traced it through the jungle to a building which was wrecked. They thought that it had been blown up."

"Well?"

"Then yesterday morning a trooper pulled down the celestial banner and contaminated it before his comrades' eyes. He must have been smitten with insanity. Nevertheless, I had him shot."

"It would seem," said Konura, spitefully, "that army discipline is not what it ought to be."

"Is that intended as an insult?" Hashimoto's features went florid, his hand slid to his sword.

"It is a comment on the facts you have stated." Konura was both blunt and unabashed. "You will have to tighten up your discipline."

"I shall do that," promised the other, darkly.

Captain Konura looked at his watch. "We sail at four. As ar-

ranged, we shall leave you the transport and one destroyer. The cargo vessel bearing planes, anti-aircraft guns and further supplies will arrive in the evening of Wednesday. The *Igaki* will call here on Friday."

"That is understood."

"It is well to stretch one's legs ashore," went on Konura. "I shall enjoy a walk to the stone house."

Hashimoto was offhandedly polite. "I regret that my duties make it impossible to accompany you. This hour, I am busy." He called a sergeant, his voice imperious, harsh. "You will conduct Captain Konura to headquarters."

Making a swift flick of a salute, the sergeant set off with his charge. The two paraded across the now stirred and rutted sand, found the inland path between the trees. Konura's bearing was one of lordly superiority; the sergeant's that of dumb subservience. Neither spoke as they walked, neither altered his attitude by one jot or tittle until they reached the shrouded depths where Teaea had made his triumphant pounce.

Here, a patrol of half a dozen troopers barred the way. One of them called something which the strutting officer failed to catch but which he naturally presumed to be a challenge.

So, curtly, he snapped, "Friends! And the password is *Nagasaki*."

One of the troopers advanced, the others following. All held their weapons muzzle forward, at the alert.

The leading rifleman said,

"Stand still and hold your hands behind you."

Konura's eyes bugged as they tried to confirm the evidence of his ears. "You are talking to a naval officer!" He drew himself up to his full five feet.

"Stand still and hold your hands behind you," grated the other.

His complexion livid, Konura's hand whipped to his sword. Beside him, the sergeant tugged out a clumsy revolver and swung it forward. They concentrated on the front to the complete exclusion of the rear and, of course, fell victims to the policy of wars on two fronts. Even as the officer's toothpick came two inches from its scabbard an elephant trod between his shoulder blades and lit a Chinese cracker inside his brain. He slumped without a word. Still obediently emulative, the sergeant slumped with him.

Forty brown-skinned infantrymen squatted on the floor around the sides of the Cave of Lightnings. None of them were bound. All had full equipment and loaded arms. They watched Jackson with eyes that were intelligent but totally disinterested. They did not speak unless spoken to.

With the lithe Malo to help him, Jackson shoved Konura into the cabinet. The victim's English was fluent, his accents cultured, but he was making far more use of the fluency than the culture. There was no fear in his face, no pleadings in his speech which consisted entirely of threats of a type which revealed his knowledge of anatomy.

He promised that Jackson would be choked to death with his own bowels. He said that the war-mongering President of the United States would dispose of his own liver in a certain unmentionable manner. He declared that a fake-Oriental movie star would clean the latrine of the Son of Heaven. Without pausing for breath, he made prophecies concerning white women and children, his language being even viler than his imagination.

"Let me!" pleaded Malo. He did not understand one word of the disgusting tirade but was shrewd enough to sense its purport. He tempted Jackson with a view of his hamlike fist.

"Not now," said Jackson, sickened and tired. "We cannot spoil him at this stage. After—I promise you!"

Malo registered extreme pleasure. He licked his knuckles, eyed the honorable nose with warlike hunger. Konura noticed none of this. He continued to orate in a voice verging upon the hysterical, his newest subject being the ancestry and future of the forty swinish traitors by the wall. The forty swinish traitors infuriated him further by listening with blank indifference.

"Squeaking pig not like mirror-men," chuckled Malo.

"Humph!"

Jackson tugged over the master switch. For perhaps the hundredth time the apparatus leaped to hotter, more brilliant life. Transformers hummed like hives of angry bees;

cathode emission doubled, tripled, quadrupled, and continued to go up from there. Inductances started to eruplate toasters, and a faint mist crept up to the nozzles of the cooling sprays.

For the first time in half an hour Konura gave his rice bucket a rest. He stood in his cabinet like a memento of monkeydom mounted in a niche, his gash hanging open, his olive-drab molars seeming to stick out a yard.

There was a tickling sensation racing up and down his body at a rate of several hundred times a second. It was a feeling that cut right through in the horizontal plane, a sort of cross-sectional itch that oscillated between his top hairs and the nails in his boots. Up and down, up and down, up and down. This went on for a period which felt like four hours but lasted precisely four minutes. Then Jackson switched off.

Accompanied by the anticipatory Malo, Jackson went to the second cabinet at the other end of the apparatus. Reaching in, the pair lugged out Konura's twin brother, or a person identical in every detail even to the dress, the confining ropes, the sword, and minor marks upon the scabbard of the sword. The real Konura now started to hoot as if crazy. Furiously he struggled against his bonds.

Nodding toward the raving officer, Jackson said, "Take him away." Then he cut the fastenings from the newcomer, felt his pulse, looked deeply into his eyes.

"You are awake?"

"I am awake," replied the image of Konura.

"You are aware?"

"I am aware."

"You have some knowledge?"

"I have some knowledge." The voice duplicated that of the original, but its tone was peculiarly flat as if the speaker knew nothing of emphasis or accentuation.

"Who are you?"

"I am Captain Suki Konura of the Divine One's Imperial Navy."

"You will listen to my orders and obey them to the letter," pronounced Jackson, carefully.

"I will listen and obey."

"Malo will take you to a place within sight of the landing beach. You will proceed to the beach by yourself, thence to your ship. You will bring ashore your first officer, navigator and chief radio operator and conduct them to the place where you left Malo. He will then bring all of you back here. Do you understand?"

"I understand."

"If any questions are asked concerning your coming or going, especially by any military officer, you will laugh and say you have heard of some women and that your journeying is nobody's business. Is that understood?"

"It is understood."

"Repeat it then!" Jackson ordered.

In a steady, unvarying monotone the other repeated all the instructions given. He maintained a dead pan while reciting but, apart from this, he was perfectly normal in

every way. He could think—within limits—see and act, again within limits, and in him there was something more than a mere automaton.

Satisfied, Jackson said, "Finally, you will obey no orders which contradict or oppose those I have given you. Have you heard?"

"I have heard."

"Malo!" Jackson's call echoed and re-echoed in the great cave.

"O, Cloud-head, I shall be with you in a little while," answered a dim voice from the depths of the rocky passage.

The voice ended in a *zunk!*-like sound of a baseball being skied. Something flopped in the gloom. Feet shuffled around, the same queer sound was repeated and again followed the flop. Jackson ran to the gap of the passage.

"Malo!"

"I am coming." *Zunk!* "I am hastening to you on winged feet." *Zunk—flop!* "My speed is as the winter hurricane which,"—*swack!*—"bends the mighty trees."

"Malo!" shouted Jackson, for the third time.

The brawny native appeared. He strolled from the darkness into the light on casual feet which were anything but winged. His huge right hand was dragging an object barely recognizable as the unfortunate Konura. He opened his mouth to say something, but before one word could emerge the monster apparatus went dead in front of his startled eyes. Jackson whirled around. All the lights in the cave flickered uncertainly, then went out.

The power plant was contained in a sturdy concrete blockhouse firmly embedded at the extreme end of a long, rocky spit. Beyond that end, across a brief stretch of wild waters, commenced the great reef. The race-tide through the intervening gap was the source of power which the automatically functioning plant snatched from the angry seas.

Jackson had never visited the place more than once a month as its innards required only perfunctory attention. In five years the plant had not failed him, but it had failed him now. He growled to himself as he studied it from a concealing point on the jungle's fringe.

"*Opeta nei!*" said that worthy. "Never fear—*Opeta's* here!"

"My eyes are dim and no longer young. Tell me, *Opeta*, what do you see?"

"Our enemy guards the-place-where-waters-make-brightness. I count six of their shrimps resting outside. There may be more inside." He parted some leaves which obstructed his view and craned forward. "And there are two more where the neck of land joins to the coast. They have a weapon which sits on sticks."

"A machine gun." Jackson thought it over. After a little while, he said, "Come!"

Cautiously, the pair crept back to a tiny clearing where forty armed troopers waited in impassive array. Jackson went up to one of them.

"Since you understand English you will be in command."

"I will be in command."

"You will obey no orders but mine. Any orders I give you will pass to your comrades in their own language." The other mouthed his agreement, and Jackson said, "Now listen."

Ten minutes later a well-disciplined squad came marching along the coastal path. With it came a prisoner, an old, white-haired man whose pale-blue eyes were weary of a world at war. A barked command, the trudging ranks made a smart turn onto the rocky spit and halted alongside the machine-gun post.

"You are to be relieved."

The pair of gunners did not argue about it. If anything, they welcomed the shifting of responsibility. Scrambling from behind their weapon they joined the rear rank of the squad, two of whose members stepped out and took over the vacated post. Another command and the squad marched efficiently on.

With synchronized step, they tramped along the causeway to the powerhouse. The six loungers had now come to attention, standing in orderly line. Heads erect, their eyes looked stonily to the front as prescribed by the Germanic drill manual of the adenoidal Son of Heaven. Not one of them was guilty of enough thought to breed suspicion.

"You are to be relieved." The speaker stared at them authoritatively. "You will ground your arms." This was contrary to all military practice at such a time and

in such a place. But if the six were on active service, their brains were not. They grounded their arms.

At this point, the American prisoner awoke from his dejected daydream and snapped, "Now is the moment!"

In Japanese, the one in command yelled, "Now!", and things happened with demoniac swiftness.

The two original machine-gunners went down without knowing what or who had hit them. They snored bloodily as they were bound. The six who had obligingly disarmed themselves had a bare couple of seconds in which to appreciate the attack, but if any one of them saw it coming he just didn't believe it. They had no time to stoop and grab their grounded weapons. They fell flat beneath the onslaught of a score.

Twelve more bashed open the door of the concrete building and swarmed inside where a loud, assertive voice began to bellow, abruptly gave up with a gulp. The stormers came out, brought with them their spoils in the shape of one broken-beaked corporal, one moody sergeant, one bespectacled underlieutenant and a slightly shopworn major.

"A dozen," remarked Jackson, openly gratified.

Going into the powerhouse, he looked around. There were a few rice-cake crumbs upon the floor, also some fruit peelings, a battered sapodilla, four squashed bananas and an old and tattered copy of

Nichi Nichi Shimbun. The plant itself was undamaged and the oil reserves had been freshly filled. He went to the output control, left untouched the switch affecting the stone house, reversed the switch governing supplies to the cave.

He went outside, closed the door, spoke to the Japanese he had placed in command. "Six men will guard this place. The two at the machine gun will retain their post. Ten more will lie concealed within the edge of the trees and watch the coastal track. At intervals of four hours those in the jungles will exchange posts with the rest. Is that understood?"

"It is understood."

"You will permit nobody to approach this place except Malo, Opeta, myself, or people who may be walking with us. All other comers you will attack and kill without compunction. Do you know what you have to do?"

"I know."

"Further," Jackson continued, "if necessary, you will fight to the death."

"To the death," agreed the other. He said it with as much emotion as if clinching a bargain for a pound of fish.

"That is all. The rest of the men, and the prisoners, will come with me."

He waited while the commander gave his orders and divided his men, then, with the sea breeze whisking through his uncovered locks, he walked along the promontory. The troopers and their captives marched steadily behind. At

the junction with the southward path, he met Opetä.

"O, Cloud-head, I have kept watch carefully and long, and the way is free. The pigs refuse to roam in the heat of the afternoon."

"Good! Let's get back to the cave. There is much to be done. My plans are nearly complete, but life is short and the hours run fast."

"*E tupu te fau, et toro te farero, e m ou te taata!*" quoted Opetä, enigmatically. "The hibiscus shall grow, the coral spread, and man shall cease!"

"Not while I've got ants in my pants," said Jackson.

"Ants?" Opetä was mystified. "Surely the white one speaks in riddles?"

By benefit of his smattering of Occidental education, the august, noble and virtuous Lieutenant Colonel Hosuke Hashimoto had heard something to the effect that it never rains but it pours. He was thinking of it right now. With the fanatical tidiness of the military mind he was summing up the pros and cons of his own situation and finding the balance did not tip the way it ought to have done. For some obscure reason, that destiny beloved of totalitarians had become blind to the righteous claims of the shortsighted, toothy little bugger in Tokyo.

To start with, one of those cold, unspeaking natives from the nearby huts had been caught snooping around in the prohibited area after dark, and had been placed before a firing squad. At the word of com-

mand, the squad of six had turned upon itself, three fighting three, and the native had disappeared during the confusion. The whole episode was incomprehensible as well as crazy.

Against such events stood factors more favorable. The island was being scoured, and the scheming foe was to be shot on sight. The powerhouse was in Nipponese hands. So were the few silent natives from those huts across the way. Tomorrow, he decided, if the evasive Jackson had not been found, he'd raid that village in the south. One or another of its inhabitants would talk—when persuasion went far enough.

But what of the navy? He, Hashimoto, was entitled to full naval support, and he didn't like Konura's story of forces being urgently required elsewhere. Despite his protests, they'd sailed that morning, every cursed vessel. On Konura's radioed instructions, the expected cargo boat had gone some other place. The *Igaki* would not be along. The proposed airfield was still no more than proposed. As for Konura's comings and goings, hobnobbing ashore with common sailors and marines, well, if that was naval discipline it was high time something was done about it.

A shot rang out in the direction of the south. He'd been hearing shots these last two hours, but no message had come in. Looking from the window, he saw the clearing, the undisturbed gardens, the mass of vegetation which rolled

from there to the mile-off sea. The banner of the Rising Sun was still dangling from the staff like a discarded dishcloth, and a pair of guards were slouching below it with equal sloppiness. To relieve his feelings, he slung open the window and barked at them, bringing them smartly to attention.

At last a dispatch runner arrived just as he pulled his furious face indoors. Eagerly he opened the flimsy paper, scanned its contents. The message said that the southern patrol, which he'd commissioned to search the village, had found it strongly defended by rebel troops. Fighting was severe. Reinforcements were wanted. Veins stood out on his forehead as he flung the paper to the ground.

"Have you come straight from there?"

"Yes, sir."

"Did you encounter no other patrols on your way to here?"

"None, sir."

"Damnation!" shouted Hashimoto, or rather the word which was the honorable equivalent.

More shots sounded, these being a little nearer and somewhat to the east. Then the ground shuddered and, a second or two later, a mighty blast also came from the east.

"The ammunition dump!" Hashimoto stared at the despatch runner as if he had found the culprit. His mind was dazed by the sheer rapidity of events, and through it floated prayers for planes, battle-ships, bombs, and Aladdin's wonderful lamp.

A tattered figure found its way

into the house, weakly answering the sentry's challenge and disregarding his stare. It appeared before Hashimoto hatless, its uniform shredded, its face fifty percent mashed. With an obvious effort, it made some sort of salute.

"As instructed, I marched the second relief to the powerhouse. Near to it we were ambushed and attacked with utmost ferocity. We were outnumbered."

Hashimoto sat down, made a great effort and composed himself. "Tell me the worst."

"I," said the figure, "am the sole survivor." With that he flopped into a chair.

The tank rolled ponderously through the clearing just as one of its now-wrecked fellows had done before, and behind it marched a sweaty but silent column of little, brown-skinned men. At a point fifteen yards from the door, the tank stopped. The column split, passed it on either side and, with dumfounding fury, fell upon the guards outside the house. The tank barged forward, drove in the door of the house, then backed away. Attackers poured through the resulting gap.

Gloomier than ever, Hashimoto was still at his desk when the owner of said desk walked in. Jackson was accompanied by Malo and Opeta.

Jackson said, "I guess it's now your turn to be the cricket in the cage. D'you want to chirp before you go?"

"We know how to deal with

stinking civilians," replied Hashimoto. "They are subject to certain laws of war."

"*Tut!*" smiled Jackson. "On this island we are alone."

"I will ask only one thing of you," went on the Japanese. "As an army officer I'm entitled to know how you turned the loyalty of my troops."

Hesitating a moment, Jackson came to a decision. "It will do no harm to tell you a little. My troops never were your troops. All your own followers who are not dead are being held as prisoners."

"How is that?"

"The key men of your forces were duplicated by electro-synthesis. That is the secret on which I have long been working, the secret you wished to force from me."

"Artificial men," scoffed Hashimoto. "Impossible!"

"No, not men. Not robots, either. They are human in all respects but one: they have no souls, no loyalties, no emotions. But they are implicitly obedient. The *numen*, the *ka*, the *ego* called 'I', is something I cannot give them." He paused, his eyes thoughtful, reflective. "A dangerous discovery, this. It is full of peril for humanity. It could wreck economic systems and make unemployment the curse of the world. It could make wars infinitely more terrible than they are today. Its misuse is even more potent than its use. The world is not ripe for it—hence my seclusion, my secrecy."

"Then why meddle with it at all?"

"Because it holds the seeds of a great benefit. I want to restore parts. I want to mold to a living body a lost limb, a missing organ. I want to build a miracle healer. So far, I have not succeeded. The difficulties are immense." Jackson's lined features hardened. "Some of us have ideas which your lousy race could never comprehend."

Hashimoto smirked, and said, "You have waxed foolish in your declining years. You think construction is more powerful than destruction. Pah, a dollar-snatching manufacturer of zombies!"

"The mirror-men were never zombies," said Jackson, coolly. "I'd made seven of them before you came to disturb my peace. They were honest and faithful servants who lacked only a certain something. Teaea was the first." He glanced at his watch. "For your interest, the image of Konura will now be handing over your vessels to the American forces he has summoned by radio. Think over what you have gained."

Leaving the broody Jap, he went outside, stood looking into the depth of the azure sky just above the trees. The two natives joined him.

"These creatures I have created must depart with the captives. They have served me well, but they are of enemy shape."

"Yes, let them all go," agreed Opet. He glanced slyly at the other. "O, Cloud-head, is it true that a mirror-man cannot hold a spirit within himself?"

"He might be given one by ac-

cident," responded Jackson, absently, "but never by design."

Opeta turned his gaze to the flagpole. It stood at the head of a rectangle of earth, and the original bunting was back once more, its length drawn out by a gentle breeze.

The burly Opeta was both thoughtful and close-mouthed. Never, never during the last four years—not even to Jackson—had he mentioned that brief scene he'd once spied in the gardens. But he could picture it still: two men walking side by side. Both were old and both white-haired. But one had been active, the other infirm and very ill. He pushed the memory aside.

"*Haere mai amu*—come and eat with us," he suggested.

But it was over that meal that, for the first time, he slipped up in the matter of thoughtfulness and secrecy. Filling Jackson's shell, he said, "I granted that chief pig of all pigs his last request."

"What was that?" inquired Jackson, curiously.

"My sharpest knife." He chuckled with his mouth full. "I know his kind. I have encountered them before. At this very moment he will be cutting his belly open."

Jackson abruptly dropped what he was eating. "This is a fine time to mention that!"

"I am sorry," said Opeta. "The thought had given me an appetite." He raised his shell. "*Inu i te ota no te!*"

THE END.

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The Children's Hour

by LAWRENCE O'DONNELL

Something had happened to his memory—there was a period of time missing. It took considerable hypnosis to bring it out—and it was lost again almost at once. But for a little time he remembered the child who had come to play for a while—

Illustrated by Williams

He sat on a bench in the little grove in front of Administration, watching the clock over the provost marshal's door jerk its long hand toward seven. Presently, when the hour struck, he would be going in that door, and up one flight of stairs, and down the corridor to the room where Lieutenant Dyke sat waiting,

as he had waited so many evenings before.

Tonight might be the night that would end it. Lessing thought perhaps it would be. Something was stirring behind the intangible locks of his mind, and tonight that door might open which had resisted the skilled manipulations of hypnosis

for so long. The door might swing wide tonight at last, and let the secret out which not even Lessing knew.

Lessing was a good hypnosis subject. Lieutenant Dyke had discovered that early in their class experiments in psychonamics—that astonishing means by which a soldier can learn to desensitize his own body and feel neither pain nor hunger, when pain or hunger would otherwise be intolerable. In the process of learning, dim and untrodden corridors of the mind are sometimes laid bare. But seldom in any mind was such a thing to be encountered as that block in Lessing's.

He responded well to all the usual tests. Immobility and desensitization, the trick of warping the balance center, the familiar routine of posthypnotic commands, all these succeeded without a hitch, as they had succeeded with so many others. But in Lessing's brain one barrier stood up immovable. Three months in his life were locked and sealed behind adamant walls—under hypnosis.

That was the strangest thing of all, for waking, he remembered those three months clearly. Under hypnosis—they did not exist. Under hypnosis he had no recollection that in June, July and August of two years ago he had been living a perfectly normal existence. He was in New York, a civilian then, working in an advertising office and living the patterned life that still existed for a time after December 7, 1941. Nothing had happened to

make his hypnotized memory blank out with such stubborn vehemence when asked to remember.

And so began the long sessions of searching, probing, delicately manipulating Lessing's mind as a complicated machine is readjusted, or as muscles wasted and atrophied are gently massaged back to life.

Up to now, the dam had resisted. Tonight—

The first stroke of seven vibrated upon the evening air. Lessing got up slowly, conscious of an unaccustomed touch of panic in his mind. This was the night, he thought. There was a stirring deep down in the roots of his subconscious. He would know the truth tonight—he would look again upon the memory his mind had refused to retain—and he was illogically just a little afraid to face it. He had no idea why.

In the doorway he paused for a moment, looking back. Only the twilight was out there, gathering luminously over the camp, blurring the outlines of barracks, the bulk of the hospital distantly rising. Somewhere a train hooted toward New York an hour away. New York, that held mysteriously the memory his mind rejected.

"Good evening, sergeant," said Lieutenant Dyke, looking up from behind his desk.

Lessing looked at him a little uneasily. Dyke was a small, tight, blond man, sharp with nervous vigor, put together with taut wires. He had shown intense interest in the phenomenon of Lessing's mem-

ory, and Lessing had felt a bewildered sort of gratitude until this moment. Now he was not sure.

"Evening, sir," he said automatically.

"Sit down. Cigarette? Nervous, Lessing?"

"I don't know." He took the cigarette without knowing he had done it. This was the flood tide, he thought, and he had no mind for any other awareness than that. The dam was beginning to crumble, and behind it what flood waters, pent up in darkness, waited for release? There were almost inaudible little clicks in his mind as the bolts subconsciously, automatically clicked open. Conditioned reflex by now. His brain, responsive to Dyke's hypnotic probing, was preparing itself.

A bare light swung above Dyke's desk. His eyes turned to it, and everything else began to darken. This, too, was reflexive by now. Dyke, behind him, traced a finger back along his scalp. And Lessing went under very quickly. He heard Dyke's voice, and that changed from a sound to a strong, even suction pulling somewhere in darkness. An indefinable force that drew, and guided as it drew. The dam began to go almost at once. The gates of memory quivered, and Lessing was afraid.

"Go back. Go back. Back to the summer of '41. Summer. You are in New York. When I count ten you will remember. One. Two—" At ten Dyke's voice dropped.

Then again. And again. Until

the long, difficult preparation for this moment proved itself, and James Lessing went back through time and . . .

And saw a face, white against the dark, blazing like a flame in the emptiness of the swift temporal current. Whose face? He did not know, but he knew there was a shadow behind it, darker than the blackness, shapeless and watchful.

The shadow grew, looming, leaning over him. A tinkling rhythm beat out. Words fitted themselves to it.

Between the dark and the daylight

When the night is beginning to lower
Comes a pause in the day's occupation

That is known as the children's hour—

It meant nothing. He groped through blindness, searching for reason.

And then it began to come back to him, the thing he had forgotten. A minor thing, something hardly worth remembering, surely. Something . . . no, someone— And not quite so minor, after all. Someone rather important. Someone he had met casually in a place he could not quite remember—a bar, or in the park, or at a party somewhere—very casually. Someone—yes, it had been in the park—but who? He could remember now a flickering of green around them, leaves twinkling in sunshine and grass underfoot. A fountain where they had stopped to drink. He could remember the water, clear and colorless, trickling musically away, but he could not quite remember who had . . . who it was— Everything

else was coming clear except the person. Forgetfulness clung stubbornly around that figure at his side. That slender figure, smaller than himself—dark? Fair? No, dark.

"Stabbed by a white wench's black eyes."

He caught his breath suddenly, in a violent physical wrench, as memory deluged back with appalling violence. Clarissa! How could he have forgotten? How *could* he? How could even amnesia have erased *her*? He sat stunned, the shining flood, all but blinding him. And somewhere under that pouring brightness was grief—but he would not let that break the surface yet.

Clarissa. What words were there to get all that vivid color into speech? When the barrier went down, it collapsed with such a blast of sudden glory that . . . that—

They had walked in the park above the Hudson, blue water marbled with deeper blue and twinkling in the sun, sliding away below them. Clear water in the fountain, tinkling down over pebbles wet and brown in the dappled shadows beneath the trees. And everything as vivid at Creation's first morning, because of Clarissa walking beside him under the shining leaves. *Clarissa*—and he had forgotten.

It was like looking back into a world a little brighter than human. Everything shone, everything glistened, every sound was sweeter and clearer; there was a sort of glory over all he saw and felt and heard. Childhood had been like that, when

the newness of the world invested every commonplace with particular glamour. Glamour—yes, that was the word for Clarissa.

Not sveltness and slickness, but *glamour*, the old word for enchantment. When he was with her it had been like stepping back into childhood and seeing everything with an almost intolerable fresh clarity.

But as for Clarissa herself—who had she been? What had she looked like? And above all, how *could* he have forgotten?

He groped backward into the shapeless fog of the past. What phrase was it that had suddenly ripped the curtain? Shock had all but erased it from his mind. It was like a lightning-flash forking through the darkness and vanishing again. Darkness—blackness—black eyes—yes, that was it. *"Stabbed by a white wench's black eyes."* A quotation; of course, but from what? More groping. Shakespeare? Yes, "Romeo and Juliet." Why, wasn't that what—Mercutio?—had said to Romeo about Romeo's first love? The girl he loved before he met Juliet. The girl he forgot so completely—

Forgot!

Lessing sat back in his chair, letting everything else slide away for a moment in sheer amazement at the complexity of the subconscious. Something had wiped out all recollection of Clarissa from level below level of his memory, but far down in the dark, memory had clung on, disguised, distorted, hiding behind analogy and allegory,

behind a phrase written by a wandering playwright three hundred years before.

So it had been impossible, after all, to erase Clarissa entirely from his mind. She had struck so deep, she had glowed so vividly, that nothing at all could quite smudge her out. And yet only Lieutenant Dyke's skill and the chance unburial of a phrase had resurrected the memory. (For one appalling moment he wondered with a shaken mind what other memories lay hidden and shivering behind other allegorical words and phrases and innocent pictures, deep in the submarine gulfs.)

So he had defeated them after all—the bodiless, voiceless people who had stood between them. The jealous god—the shadowy guardians— For a moment the glare of showering gold flashed in his mind's eye blindingly. He was, in that one shutter-flash, aware of strangers in rich garments moving against confused and unfamiliar backgrounds. Then the door slammed in his face again and he sat there blinking.

Them? Defeated *them*? Who? He had no idea. Even in that one magical glimpse before memory blanked out again he thought he had not been sure who *they* were. That much, perhaps, had been a mystery never solved. But somewhere back in the darkness of his mind incredible things lay hidden. Gods and showering gold, and people in bright clothing that blew upon a wind not—surely not—of this earth—

Bright, bright—brighter than normal eyes ever perceive the world. That was Clarissa and all that surrounded her. It had been a stronger glamour than the sheer enchantment of first love: He felt sure about that now. He who walked with Clarissa shared actual magic that shed a luster on all they passed. Lovely Clarissa, glorious world as clear—as *clarissima* indeed—as a child's new, shining world. But between himself and her, the shadowy people—

Wait. Clarissa's— aunt? Had there been an . . . an aunt? A tall, dark, silent woman who damped the glory whenever she was near? He could not remember her face; she was no more than a shadow behind Clarissa's shining presence, a faceless, voiceless nonentity glowing in the background.

His memory faltered, and into the gap flowed the despair which he had been fighting subconsciously since the lustrous flood first broke upon him. *Clarissa, Clarissa*—where was she now, with the glory around her?

"Tell me," said Lieutenant Dyke.

"There was a girl," Lessing began futilely. "I met her in a park—"

Clarissa on a glittering June morning, tall and dark and slim, with the waters of the Hudson pouring past beyond her in a smooth, blue, glassy current. *Stabbed by a white wench's black eyes.* Yes, very black eyes, bright and starry with blackness, and set wide apart in a grave face that had the remoteness and thoughtfulness

of a child's. And from the moment he met that grave, bright glance they knew one another. He had been stabbed indeed—stabbed awake after a lifetime of drowsiness. (Stabbed—like Romeo, who lost both his loves. . . .)

"Hello," said Clarissa.

"It didn't last very long . . . I think," he told Dyke, speaking distractedly. "Long enough to find out there was something very strange about Clarissa . . . very wonderful . . . but not long enough to find out what it was . . . I think."

(And yet they had been days of glory, even after the shadows began to fall about them. For there were always shadows, just at her elbow. And he thought they had centered about the aunt who lived with her, that grim nonentity whose face he could not remember.)

"She didn't like me," he explained, frowning with the effort of remembering. "Well, no, not quite that. But there was something in the . . . in the air when she was with us. In a minute I may remember—I wish I could think what she looked like."

It probably didn't matter. They had not seen her often. They had met, Clarissa and he, in so many places in New York, and each place acquired a brilliance of its own once her presence made it *clarissima* for him. There was no sensible explanation for that glory about her, so that street noises clarified to music and dust turned golden while they were together. It was as if

he saw the world through her eyes when they were together, and as if she saw it with vision clearer—or perhaps less clear—than human.

"I knew so little about her," he said. (She might almost have sprung into existence in that first moment by the river. And so far as he would ever know, now, she had vanished back into oblivion in that other moment in the dim apartment, when the aunt said—now what was it the aunt had said?)

This was the moment he had been avoiding ever since memory began to come back. But he must think of it now. Perhaps it was the most important moment in the whole strange sequence, the moment that had shut him off so sharply from Clarissa and her shining, unreal, better than normal world. . . .

What had the woman said to him?

He sat very still, thinking. He shut his eyes and turned his mind inward and backward to that strangely clouded hour, groping among shadows that slid smoothly away at his touch.

"I can't—" he said, scowling, his eyes still closed. "I can't. They were . . . negative . . . words, I think, but— No, it's no use."

"Try the aunt again," suggested Dyke. "What did she look like?"

Lessing put his hands over his eyes and thought hard. Tall? Dark, like Clarissa? Grim, certainly—or had that only been the connotation of her words? He could not remember. He slumped down in his chair, grimacing with the effort. She had stood before the mirrors,

hadn't she, looking down? Had she? What were her outlines against the light? She had no outlines. She had never existed. Her image seemed to slide behind furniture or slip deftly around corners whenever his persistent memory followed it through the apartment. Here, quite clearly, the memory block was complete.

"I don't think I ever can have seen her," he said, looking up at Dyke with strained, incredulous eyes. "She just isn't there."

Yet it was her shadow between him and Clarissa in the last moment before . . . before . . . what was it that cut off all memory between that hour and this? What happened? Well, say before forgetfulness began, then. Before—Lethe.

This much he remembered—Clarissa's face in the shadowed room, grief and despair upon it, her eyes almost unbearably bright with tears, her arms still extended, the fingers curved as they had slipped from his. He could remember the warmth and softness of them in that last handclasp. And then Lethe had poured between them.

"That was it," said Lessing in a bewildered voice. He looked up. "Those were the highlights. None of them mean anything."

Dyke drew on his cigarette, his eyes narrow above its glow. "Somewhere we've missed the point," he said. "The real truth's still hidden, even deeper than all this was. Hard to know yet just where to

begin probing. Clarissa, do you think?"

Lessing shook his head. "I don't think she knew." (She had walked through all those enchanted days, gravely and aloofly, a perfectly normal girl except for— What had happened? He could not quite remember yet, but that which did happen had *not* been normal. Something shocking, something terrible, buried deep down under the commonplaces. Something glorious, glimmering far beneath the surface.)

"Try the aunt again," said Dyke.

Lessing shut his eyes. That faceless, bodiless, voiceless woman who maneuvered through his memories so deftly that he began to despair of ever catching her full-face. . .

"Go back, then," Dyke told him. "Back to the very beginning. When did you first realize that something out of the ordinary was happening?"

Lessing's mind fumbled backward through those unnaturally empty spaces of the past.

He had not even been aware, at the outset, of the one strangeness he could remember now—that wonderful clarifying of the world in Clarissa's presence. It had to come slowly, through many meetings, and if by a sort of induced magnetism he became sensitized to her and aware as she was aware. He had known only that it was delightful simply to breathe the same air as she, and walk the same streets.

The same streets? Yes, something curious had happened on a street somewhere. Street noise

loud voices shouting— An accident. The collision just outside the Central Park entrance at Seventy-second Street. It was coming back clearly now, and with a swelling awareness of terror. They had been strolling up by the winding walk under the trellises toward the street. And as they neared it, the scream of brakes and the hollow, reverberant crash of metal against metal, and then voices rising.

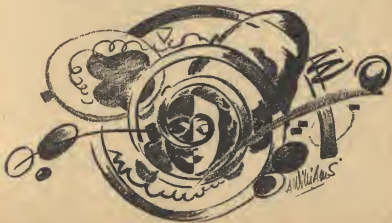
Lessing had been holding Clarissa's hand. At the sudden noise he felt a tremor quiver along her arm, and then very softly, and with a curiously shocking deftness, her hand slipped out of his. Their fingers had been interlocked, and his did not relax, but somehow her hand was smoothly withdrawn. He turned to look.

His mind shrank from the memory. But he knew it had happened. He knew he had seen the circle of

shaken air ring her luminously about, like a circle in water from a dropped stone. It was very like the spreading rings in water, except that these rings did not expand, but contracted. And as they contracted, Clarissa moved farther away. She was drawn down a rapidly diminishing tunnel of shining circles, with the park distorted in focus beyond them. And she was not looking at Lessing or at anything around him. Her eyes were downcast and that look of thoughtful quiet on her face shut out the world.

He stood perfectly still, too stunned even for surprise.

The luminous, concentric rings drew together in a dazzle, and when he looked again she was not there. People were running up the slope toward the street now, and the voices beyond the wall had risen to a babble. No one had been near



enough to see—or perhaps only Lessing himself could have seen an aberration of his own mind. Perhaps he was suddenly mad. Panic was rising wildly in him, but it had not broken the surface yet. There hadn't been time.

And before the full, stunning realization could burst over him, he saw Clarissa again. She was coming leisurely up the hill around a clump of bushes. She was not looking at him. He stood quite still in the middle of the path, his heart thudding so hard that the whole park shook around him. Not until she reached his side did she look up, smiling, and take his hand again.

And that was the first thing that happened.

"I couldn't talk to her about it," Lessing told Dyke miserably. "I knew I couldn't from the first look at her face I got. Because *she didn't know*. To her it hadn't happened. And then I thought I'd imagined it, of course—but I knew I couldn't have imagined such a thing unless there was something too wrong with me to talk about. Later, I began to figure out a theory." He laughed nervously. "Anything, you know, to keep from admitting that I might have . . . well, had hallucinations."

"Go on," Dyke said again. He was leaning forward across the desk, his eyes piercing upon Lessing's. "Then what? It happened again?"

"Not that, no."

Not that? How did he know? He could not quite remember yet. The memories came in flashes, each

complete even to its interlocking foreshadow of events to come, but the events themselves still lay hidden.

Had those shining rings been sheer hallucination? He would have believed so, he was sure, if nothing further had happened. As the impossible recedes into distance we convince ourselves, because we must, that it never really could have been. But Lessing was not allowed to forget. . . .

The memories were unraveling now, tumbling one after another through his mind. He had caught the thread. He relaxed in his chair, his face smoothing out from its scowl of deep concentration. Deep beneath the surface that discovery lay whose astonishing gleam shone up through the murk of forgetfulness, tantalizing, still eluding him, but there to be grasped when he reached it. If he wanted to grasp it. If he dared. He hurried on, not ready yet to think of that.

What had the next thing been?

The park again. Curious how memory-haunted the parks of New York were for him now. This time there had been rain, and something—alarming—had happened. What was it? He did not know. He had to grope back step by step toward a climax of impossibility that his mind shied away from touching.

Rain. A sudden thunderstorm that caught them at the edge of the lake. Cold wind ruffling the water, raindrops spattering down big and noisy around them. And

himself saying, "Hurry, we can make it back to the summerhouse."

They ran hand in hand along the shore, laughing, Clarissa clutching her big hat and matching her steps to his, long, easy, running strides so that they moved as smoothly as dancers over the grass.

The summerhouse was dingy from many winters upon the rocks. It stood in a little niche in the black stone of the hillside overlooking the lake, a dusty gray refuge from the spattering drops as they ran laughing up the slope of the rock.

But it never sheltered them. The summerhouse did not wait.

Looking incredulously up the black hills, Lessing saw it glimmer and go in a luminous blurring-out, like a picture on a trick film that faded as he watched.

"Not the way Clarissa disappeared," he told Dyke carefully. "That happened quite clearly, in concentric diminishing rings. This time the thing just blurred and melted. One minute it was there, the next—" He made an expunging gesture in the air.

Dyke had not moved. His clear, piercing gaze dwelt unwavering upon Lessing.

"What did Clarissa say this time?"

Lessing rubbed his chin, frowning. "She saw it happen. I . . . I think she just said something like, 'Well, we're in for it now. Never mind, I like walking in the rain, don't you?' As if she were used to things like that. Of course,

maybe she was— It didn't surprise her."

"And you didn't comment this time either?"

"I couldn't. Not when she took it so calmly. It was a relief to know that she'd seen it too. That meant I hadn't just imagined the thing. Not this time, anyhow. But by now—"

Suddenly Lessing paused. Up to this moment he had been too absorbed in the recapture of elusive memory to look objectively at what he was remembering. Now the incredible reality of what he had just been saying struck him without warning and he stared at Dyke with real terror in his eyes. How could there be any explanation for these imaginings, except actual madness? All this could not possibly have happened in the lost months which his conscious mind had remembered so clearly. It was incredible enough that he could have forgotten, but as for *what* he had forgotten, as for the unbelievable theory he had been about to explain to Dyke, and quite matter-of-factly, drawn from hypotheses of sheer miracle—

"Go on," Dyke said quietly. "By now—what?"

Lessing took a long, unsteady breath.

"By now . . . I think . . . I began to discard the idea I was having hallucinations." He paused again, unable to continue with such obvious impossibilities.

Dyke urged him gently. "Go on, Lessing. You've got to go on until we can get hold of something to work from. There must be an

explanation somewhere. Keep digging. Why did you decide you weren't subject to hallucinations?"

"Because . . . well, I suppose it seemed too easy an explanation," Lessing said doggedly. It was ridiculous to argue so solidly from a basis of insanity, but he searched through his mind again and came out with an answer of very tenuous logic. "Somehow madness seemed the wrong answer," he said. "As I remember now, I think I felt there was a reason behind what had happened. Clarissa didn't know, but I'd begun to see."

"A reason? What?"

He frowned with concentration. In spite of himself the fascination of the still unknown was renewing its spell and he groped through the murk of amnesia for the answer he had grasped once, years ago, and let slip again.

"It was so natural to her that she didn't even notice. A nuisance, but something to accept with philosophy. You were meant to get wet if you got caught in the rain away from shelter, and if the shelter were miraculously removed—well, that only emphasized the fact that you were meant to get a soaking. *Meant* to, you see." He paused, not at all sure just where this thread was leading, but his memory, dredging among the flotsam, had come up with that one phrase that all but dripped with significance when he saw it in full light. Revelations hovered just beyond the next thought.

"She did get wet," he went on slowly. "I remember now. She

went home dripping, and caught cold, and had a high fever for several days—"

His mind moved swiftly along the chain of thoughts, drawing incredible conclusions. Was something, somehow, ruling Clarissa's life with a hand so powerful it could violate every law of nature to keep her in the path its whim selected? Had something snatched her away through a tiny section of time and space to keep the street accident from her? But she had been meant to have that drenching and that fever, so—let the summerhouse be erased. Let it never have been. Let it vanish as naturally as the rain came down, so that Clarissa might have her fever . . .

Lessing shut his eyes again and ground his palms hard over them. Did he want to remember much farther? What morasses of implausibility was his memory leading him into? Vanishing summerhouses and vanishing girls and . . . and . . . intervention from—outside? He took one horrified mental glance at that thought and then covered it up quickly and went on. Deep down in the murk the gleam of that amazing discovery still drew him on, but he went more slowly now, not at all certain that he wanted to plumb the depths and see it clearly.

Dyke's voice broke in as his mind began to let go and fall slack.

"She had a fever? Go on, what came next?"

"I didn't see her for a couple of weeks. And the . . . the colors be-

gan to go out of everything—”

It had to be renewed, then, by her presence, that strange *glamour* that heightened every color, sharpened every outline, made every sound musical when they were together. He began to crave the stimulus as he felt it fade. Looking back now, he remembered the intolerable dullness of that period. It was then, probably, that he first began to realize he had fallen in love.

And Clarissa, in the interval, had discovered it too. Yes, he was remembering. He had seen it shining in her enormous black eyes on the first day he visited her again. A brilliance almost too strong to look upon, as if bright stars were interlacing their rays there until her eyes were a blaze of blackness more dazzling than any light.

He had seen her, alone, in that first meeting after her illness. Where had the aunt been? Not there, at any rate. The strange, windowless apartment was empty except for themselves. Windowless? He looked back curiously. It was true—there had been no windows. But there were many mirrors. And the carpets were very deep and dark. That was his dominant impression of the place, walking upon softness and silence, with the glimmer of reflecting distances all around.

He had sat beside Clarissa, holding her hand, talking in a low voice. Her smile had been tremulous, and her eyes so bright they were almost frightening. They were very happy that afternoon. He glowed a little,

even now, remembering how happy they had been. He would not remember, just yet, that nothing was to come of it but grief.

The wonderful clarity of perception came back around him by degrees as they sat there talking, so that everything in the world had seemed gloriously right. The room was the center of a perfect universe, beautiful and ordered, and the spheres sang together as they turned around it.

“I was closer to Clarissa then,” he thought to himself, “than I ever came again. That was Clarissa’s world, beautiful and peaceful, and very bright. You could almost hear the music of the machinery, singing in its perfection as it worked. Life was always like that to her. No, I never came so close again.”

Machinery— Why did that image occur to him?

There was only one thing wrong with the apartment. He kept thinking that eyes were upon him, watching all he thought and did. It was probably only the mirrors, but it made him uncomfortable. He asked Clarissa why there were so many. She laughed.

“All the better to see you in, my darling.” But then she paused as if some thought had come to her unexpectedly, and glanced around the reflecting walls at her own face seen from so many angles, looking puzzled. Lessing was used by then to seeing reactions upon her face that had no real origin in the normal cause-and-effect sequence of familiar life, and he did not pursue the matter. She was a strange

creature, Clarissa, in so many, many ways. Two and two, he thought with sudden affectionate amusement, seldom made less than six to her, and she fell so often into such disproportionately deep and thoughtful silences over the most trivial things. He had learned early in their acquaintance how futile it was to question her about them.

"By now," he said, almost to himself, "I wasn't questioning anything. I didn't dare. I lived on the fringes of a world that wasn't quite normal, but it was Clarissa's world and I didn't ask questions."

Clarissa's serene, bright, immeasurably orderly little universe. So orderly that the stars in their courses might be forced out of pattern, if need be, to maintain her in her serenity. The smooth machinery singing in its motion as it violated possibility to spare her a street accident, or annihilating matter that she might have her drenching and her fever. . . .

The fever served a purpose. Nothing happened to Clarissa, he was fairly sure now, except things with a purpose. Chance had no place in that little world that circled her in. The fever brought delirium, and in the delirium with its strange, abnormal clarity of vision—suppose she had glimpsed the truth? Or was there a truth? He could not guess. But her eyes were unnaturally bright now, as if the brilliance of fever had lingered or as if . . . as if she were looking ahead into a future so incredibly shining that its reflections glittered

constantly in her eyes, with a blackness brighter than light.

He was sure by now that she did not suspect life was at all different for her, that everyone did not watch miracles happen or walk in the same glory *clarissima*. (And once or twice the world reversed itself and he wondered wildly if she could be right and he wrong, if everyone did but himself.)

They moved in a particular little glory of their own during those days. She did love him; he had no doubt of it. But her subtle exaltation went beyond that. Something wonderful was to come, her manner constantly implied, but the most curious thing was that he thought she herself did not know what. He was reminded of a child waking on Christmas morning and lying there in a delicious state of drowsiness, remembering only that something wonderful waits him when he comes fully awake.

"She never spoke of it?" Dyke asked.

Lessing shook his head. "It was all just beneath the surface. And if I tried to ask questions they . . . they seemed to slide right off. She wasn't consciously evading me. It was more as if she hadn't quite understood—" He paused. "And then things went wrong," he said slowly. "Something—"

It was hard to recapture this part. The bad memories were submerged perhaps a little deeper than the good ones, shut off behind additional layers of mental scar tissue. What had happened? He knew

(Continued on page 117)



Counting Five Million A Second...



If you have a short-wave receiver, you can tune to five megacycles and pick up WWV, the Bureau of Standards frequency standard station. Their program is extremely interesting at all times—

twenty-four hours a day, three hundred sixty-five days most years, three hundred sixty-six this year. It consists of a continuous 440-cycle note, with a sharp tick once a second. The tone is interrupted

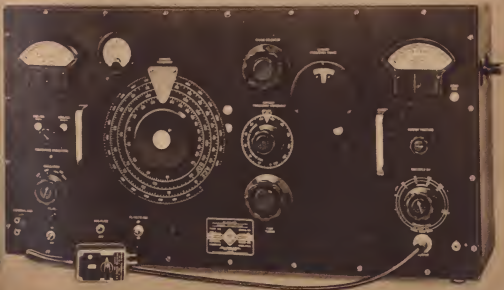
every five minutes while the station identification is transmitted in code; on the hour and half-hour, the identification is in voice. The one-second ticks are not interrupted. The same program is transmitted on ten megacycles; on fifteen megacycles a similar program using a 1000-cycle tone is transmitted.

The interesting feature of the program—acutely interesting to manufacturers of precision equipment—is that the five megacycle, ten megacycle and fifteen megacycle frequencies are accurate to one part in ten million; the same accuracy holds the one-second ticks, the 440-cycle and the 1000-cycle notes, and the hour, half-hour and five-minute intervals of the station breaks. That five megacycle fre-

quency is five million cycles per second plus or minus point five cycles.

So say they. How do they know? How does a broadcasting station *know* they are transmitting on "770 kilocycles as authorized by the Federal Communications Commission"?

The wall-full of apparatus on Page 99 is the answer. It is an installation of this type, manufactured by General Radio Company, that counts WWV's five million cycles—literally and actually counts them. At the extreme left, visible just beside and above the technician's hand, is a clock dial. In the cabinet immediately below is a high-precision quartz-crystal oscillator circuit producing a 200-kilocycle note, and a series of multivibrator oscillator circuits. The quartz crys-



tal is mounted in a massive, extremely closely regulated thermostatically controlled "oven" that maintains its temperature very precisely, and thus maintains the oscillation frequency exactly.

A multivibrator oscillator circuit has the peculiarity that it is very unstable in itself, but produces a long series of harmonics, any one of which can be "locked in" with a stable oscillator. Once locked in, the multivibrator becomes perfectly stable, and follows perfectly in step with the stable oscillator—a beautiful electrical gear-chain! Thus the tenth harmonic of one multivibrator, locked with the 200-kilocycle precision oscillator, provides a 20-kilocycle note as precise as the original 200-kilocycle oscillator. A second multivibrator can "gear down" to two kilocycles; actually other intervals are selected, but by multivibrators, the 200-kilocycle note is both geared up and geared down to produce the 5,000,000-cycle, the 10,000,000-cycle and 15,000,000-cycle transmitter frequencies, and the 440- and 1000-cycle notes.

That 1000-cycle note is transmitted on the 15,000,000-cycle transmission, but, more important, it is amplified and made to drive a synchronous-type twenty-four-hour electric clock. This clock is compared once a day with the true time determined by astronomical observation. Any slight error of frequency in the original 200-kilocycle note will accumulate on the clock, and, even though very minute, presently become detectable. Then

minute adjustments of the temperature of the crystal oscillator oven can be made to speed or slow the oscillator as required.

The wall-full of equipment is needed to supply precisely controlled power, and house the numerous auxiliary frequency filters, oscillators and amplifiers.

Currently, I understand, there is no priority rating high enough to get one of these outfits; in peacetime they are more than a little expensive. For most laboratory high-precision work, a secondary frequency standard—one not involving the actual counting of the cycles—is adequate. This consists of such an apparatus as that on page 100—an extremely precise crystal oscillator, in a precisely regulated oven similar to that used in the primary standard, and a simpler multivibrator circuit giving a few most useful frequencies. This type of unit is used by receiver manufacturers for checking their regular frequency generators.

The standard signal generator shown above is the sort of instrument used in radio manufacturer's design laboratories for checking response and selectivity of new sets.

This General Radio instrument is available to anyone with a multiple-A-and-very-small-digit priority and the price of a small automobile to invest in equipment. Its precision suffers only by comparison with the extreme accuracy attained in primary and secondary standards—and it, unlike the standards, can produce a smooth range of frequencies instead of only definite multiples.

The Vanishing Yankee

by GEORGE O. SMITH

The Garret Genius, or basement experimenter, was the sole manufacturer of radio receivers for home use back in the early '20s. He did a good job—so darned good in fact that he worked himself clear out of that business!

Photographs courtesy of General Radio Co.

With the passing of customs, ideals, and the Good Old Days, another American institution is approaching extinction. He may never reach total extinction, for his strictly survivor type will continue to live no matter how tough the going becomes. But he is on the wane; has been for some time, the fact of his passing has scarcely been noticed by John Q. Public.

I speak of the Garret Genius. Alexander Graham Bell was a Garret Genius, as was Samuel F. B. Morse, Daugerre, Talbot, Benjamin Franklin, the Wright Brothers, and the host of others upon which our present foundation of science is based.

But the Garret Genius is dying off—no, is being choked off and he himself is partly responsible for it.

It happened like this:

Back in those Good Old Days, life, and science as well, was not as complicated as it is today. Discoveries were not hard to make since there were many fundamentals to be uncovered with simple equipment. Volta, who discovered the simple electric cell, discovered electrochemistry and laid the foundation for almost a hundred years of research in electrochemistry. Any schoolboy can repeat his experiments, in fact a piece of zinc and a strip of copper stuck in a lemon will make an electric cell that is better than Volta's early experimental cells. Up to that time, however, nothing was known about the Electromotive Series of metals, nothing was known about the electricity-producing properties of anything. Volta discovered it—and yet it was but a matter of time be-



fore someone else hit upon the idea.

In much the same way, Faraday discovered capacitance, Oersted demonstrated the principles of induction, and later, Sir Oliver Lodge hung the two together and discovered the first principles of inductance and capacitance as a function of a resonant circuit.

Back in those early days of radio, little or nothing was known about resonance; they brute-forced their wireless impulses into untuned lines for antenna, and collected the waves on another inefficient wire. Hertz was lucky. If it were not for the happy fact that a spark-gap outfit will work fine at ultra-high frequencies, he might not have given the world a foundation for radio. He demonstrated the effects of tuning, which would have been impossible if long wave lengths were the only thing that worked with his crude equipment. Ultra-high frequencies are about all that you can use on a tuned rod unless you have a room the size of Yankee Stadium for your quarter-wave radiator. By the same token, it would have been utterly impossible for Hertz to demonstrate the polarization of radio waves with long wave lengths.

The equipment used by the Garret Genius was simple. It could be simple because the Garret Genius was working with simple phenom-

ena. It had not become complex—yet.

But Dr. Lee DeForest put a grid in a Fleming Valve, making a triode out of a rectifier, and from that time on, life has become one grand headache for the vacuum tube designer. Some of the first "Audion Valves" were terrible things, from the present day conception of a radio tube.

But even in those days, life was getting complicated for the Garret Genius. He could not keep up with tube development since he must have experience in ultra-minute machine-work, glassblowing, and welding as well as his chosen profession as Garret Engineer in elementary electronics. A modern tube factory in full operation has become a collection of machinery that makes Rube Goldberg inquire about the riparian rights on a desert isle in the South Seas. The Garret Genius hasn't a chance; his entire garret would not hold the machinery required to make a simple triode. It would take him six weeks to hand-machine the parts necessary to reproduce the triode he hoped to improve upon, and then he would discover that the tube engineer can take a sheaf of drawings and a pad of paper and tell the Garret Genius how to make any kind of tube he wanted, all the way from here to there.

Fig. 1. An impedance bridge is handy for determining whether those coils have the inductance they were originally supposed to have.

Radio twenty years ago was in the Garret Genius stage. Production lines were not knocking out five-tube midgits for \$9.95 complete; radio tubes themselves cost

about seven dollars per copy and the radio gadgeteer used to remove them from their sockets and replace them in their papier-mache cartons after each evening of tinkering. Men used to talk glibly about regenerative circuits, and the standard equipment was about four miles of wire on the roof.

You could get a lot of fun and sensitivity out of a regenerative circuit. Often you got whistles, squeals, and heterodynes, which gave rise to the statement that: "They're using the pig's squeal at last—for radio!" Storage battery juice ate holes in the floor, and the manufacturers of "4" batteries smoked fifty cent cigars and hired men to count their money.

A thing like a signal generator was not known. Output meters were as unknown. Distortion was something that happened when you stood on a metal pie plate, and power output was a matter of whether you could hear the speaker or not. Understandability was another quality not included in the program; how would you sound if you were squeezed through a glorified, metal morning glory?

They talked around the block on spark-gap transmitters, and the boys fought with the radio broadcasting stations for the right to use the long-wave end of the band. Hertz had been forgotten and short waves were considered the graveyard of creation. You could hear a singer rendering "*La Miserere*" with the accompaniment of a ripping raspberry from one of the local boys who was using a rotary

spark gap to tell his pal about his transmitter. He might have done as well by yelling out of the window, but that wasn't scientific, and besides, the quality of the radio broadcasting did not suffer too much for having a few burps and whistles for a background.

People were too elated to get anything on their collection of oatmeal boxes - with - wire, Audion Valves, and headphones to be concerned over interference.

But things have changed. The regenerative receiver is forbidden. It interfered too much with broadcasting. The radio amateurs were relegated to the graveyard of the short waves, which they proceeded to gadgeteer into something amazing. The tuned radio frequency receiver came into existence, and speakers became understandable. Music sounded like music, and—

Big Business stepped in!

What does it take to build a radio receiver that will equal or better the one you have in your living room? Enough to keep the Garret Genius busy tinkering, if he has the equipment. If he has not, he may tinker all year and not come up with anything that will compete. At the very least, he will be so busy trying to equal the set in his living room that he will have no time to make improvements.

At any rate, he decides to try. (Note: a good income to keep body and soul together is desirable; the prospects of getting rich this way are none to good, unless you take up scribbling articles about your

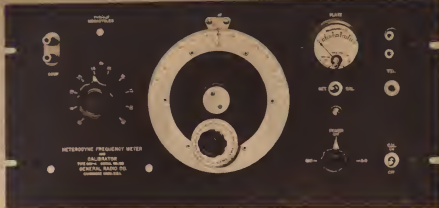


Fig. 2. If it's a superheterodyne you're building, a frequency meter saves a lot of trouble in determining just how the oscillator circuit is behaving.

adventures in science as one friend is doing!)

So our Garret Genius looks the books over, and comes to the same decision as the engineer made some years ago: There is nothing like a superheterodyne, for sensitivity, selectivity, headaches and burned midnight oil. Being of sound mind, for your garret genius is a pretty smart fellow after all, he decides to purchase his tubes. The I. F. transformers look a little tricky, and besides, you need a complete laboratory to engineer an intermediate-frequency transformer worthy of the name. He'll buy his loudspeaker, since he hasn't the machinery necessary to the building of one. A chassis is easy, that isn't

cribbing because he can buy a blank one from the same place he buys his tubes and punch it full of holes at his own pleasure.

A three-gang condenser is something like a meat slicer with an insulated rotor, but more so. Making one of these would be utter foolishness; if you buy one, you know what you have. Making one would take a couple of weeks for a Garret Genius and then he wouldn't know what he had.

He comes to the band-switching and immediately adds a package of aspirin to his list of purchases. Well, this radio store has a custom-built switch that was among a lot canceled by the Boxey Radio

Company and sold by the switch company to radio stores.

Coils? Well, he's got some bakelite tubing and a couple of hundred feet of assorted enameled wire. He'll make his own coils.

Let's see, now. Garret Genius has collected about everything he needs, hasn't he? Just about. He'll need some coil information which he can garner from one of those tricky coil-calculators offered by the American Radio Relay League. Armed with a circuit diagram, and his bushel or so of parts, Garret Genius retires to his workshop like a hibernating bear.

To digress a moment, one of the reasons for the extinction of the Garret Genius may be because they are now usually found in the basement. The upstairs has been found to be useful for bedrooms with the advent of furnaces and the Garret Genius is now to be found prowling around in the basement. This factor has its own ramifications. The basement is where the furnace is, and the fruit cellar and the Private Stock, if any. Warmth from the furnace, food from the fruit cellar, and red-eye from the runipus room is not the incentive for fast and furious labor that is found in a cold, dismal, leaky-roofed, broken-windowed garret.

But Garret Genius is energetic. He sorts his pile of parts and places them in boxes and shelves. He cleans a place on the workbench, upsetting a can of paint and getting dust on the daughter's play-chair which is still tacky from the last

coat of varnish. Unworried, he attacks his blank chassis with a hack saw and a file.

For a couple of days, there emerge from the basement a series of horrible noises that grate upon Mrs. Genius' ears and cause cold chills to chase up and down her spine. Filing on a chassis with a rough file does things to the spine of the person *not* doing it, for some unknown reason. Mrs. Genius objects, and Garret looks through his catalogue, finding a set of punches which can be used to poke the right sized holes in the chassis.

Silence ensues. Save for an occasional *BANG!* when Garret hits the top of the punch with a heavy hammer to pierce the chassis, all is serene. Of course, the electric drill he uses to make the pilot hole for the punch raises hob with the upstairs radio, but he can't hear it through the drilling, and so what?

So, Mrs. Genius writes down one more reason for that trip to Reno.

Once the chassis is poked full of holes, Garret Genius begins to mount his parts. We'll omit the part where he finds that he hasn't quite calculated properly, and has to get a fresh chassis. We'll also omit the part where he swears, unmounts the parts, and rams another hole in the chassis.

This is quiet going. Nor is there anything tricky, dangerous, or di-

Fig. 3. And then a beat-frequency oscillator—the BFO of the experimenter—is essential for checking up on the audio frequency amplifier.





Fig. 4. The audio frequency wave analyzer is the best way of telling just why the set is making a tenor-sax sound like a tenor with a head cold.

force-producing about it. So Garret finishes phase two of his project and comes to the wiring.

This, too, is more or less silent. Burned knuckles are the main occupational hazard. But the wiring is not as simple as it sounds. There is considerable re-wiring, re-unwiring, and re-re-wiring. Give Garret a few days of this, and he will come up with a fair facsimile of what the underside of his upstairs receiver looks like. That, quite frankly, is a mess.

It is, to the engineer who designed it, a reasonable mess. Garret doesn't know which circuits can be left to float, and which circuits require delicate placement. That's all right—he'll find out!

His wiring job is finished. Garret Genius is about to make music!

Now comes his first setback. He is using a 455kc I. F. That's fine, but how do you get 455 kilocycles?

And, once you get the I.F. aligned, how do you go about making the rest of the receiver work? Right there you need a signal generator and a good output meter. So—

Garret Genius goes right out and buys a good signal generator. Fine. But a signal generator capable of doing a good job of engineering will run above four hundred dollars! Now that does not mean that a radio man can not touch up a receiver with one of the \$25.98 signal generators, nor does it mean that the latter are bad. A signal generator capable of emitting a signal for aligning is one thing, and a

signal generator capable of emitting a signal of known power, modulated with a known audio frequency at a standard percentage of modulation is another thing. Garret Genius is not only concerned with the maximum peak signal resulting from his alignment, which is what the cheaper variety will give with excellent results, Garret must know the value of his signal voltage.

So Garret buys a standard signal generator. It is calibrated to within an inch of its life. It is equipped with the necessary meters to maintain a standard output; standard depth of modulation; controls to adjust both; and it is equipped with a calibrated attenuator which will let him read the radio frequency voltage appearing at the output terminals. This will lie within the range of one volt maximum to one millionth of one volt. Oh yes, a good superheterodyne will amplify three or four microvolts worth of radio frequency, modulated at four hundred cycles per second at thirty per cent modulation, into one watt of power, which across a load of ten thousand ohms, for instance, equals one hundred volts.

That is a gain of one hundred million, and, as Garret will find, it ain't hay!

A reliable output meter will assay another fifty dollars. This is equipped with step-switches to accommodate various output loads and to change the range of meter-reading so that Garret can check the maximum power output of his receiver as well as noise measure-

ments of very small power.

So he has squandered one-half grand on his project, and he hasn't started yet.

Garret proceeds down the line and adjusts the I.F. channel. Using his signal generator and output meter, he proceeds to check the gain-per-stage, juggling screen resistors and cathode-bias resistors until he achieves the best results.

Halfway through the latter job, he discovers that he has a huge quantity of audio hum appearing across his output, so another evening goes by whilst Garret fiddles with the filtering system, and the parts layout. He finds to his surprise that moving some of the main parts will kill his hum, and so we have another session with the chassis punch.

With his Intermediate Frequency channel in working order, and the receiver clicking all the way from the modulator to the final output, Garret begins to tinker with the modulator tube.

He consults the tube manual, finds the best diagram, and proceeds to work it out that way. But on the tube operating chart, it calls for an average peak oscillator signal of two volts. Now, you can't measure two volts worth of 1000kc stuff with a steel rule. How Garret got along this far without a D.C. Voltmeter - millimeter - ohmmeter I'll never know, but the volt-ohmmeter won't measure oscillator voltage anyway. Using one of the kind that are capable of measuring A.C. voltage is no good, either, since the application of long test-leads and

the load of the meter kills the oscillation.

No, the proper way to measure two volts of 1000 kilocycle signal is with a Vacuum Tube Voltmeter.

There goes another hundred and fifty dollars. You can get a pretty good VTVM for that amount. It has a tiny Acorn Tube in a test-probe that you can hang right on the part to be measured without ill effects, and it will cover anything from a hundred and fifty volts A. C. down to what you can read on the bottom end of a one and one-half volt scale; about point zero one if you have good eyes and are willing to guess within fifty per cent of that .01 figure.

This may be a good place to state that the above equipment may be constructed. It is not impossible. You may also build your own automobile, too, if you care to; and there is nothing against making your own refrigerator, washing machine, or seven-room home, either. A vacuum tube voltmeter is not too hard to make and calibrate. An output meter is rather simple if you do not care for the multi-range, multi-load-resistance features. A signal generator worthy of the name is a project in itself, and not to be rushed into willy-nilly. You'll require more equipment to build a signal generator than you need to engineer the radio you intend to use it on. You can cut corners with that, too, but you want something that you can rely upon at any time; a generator that puts out exactly what it says



Fig. 5. The simplest way of checking the quality of production-line coils for radio receivers involves a calibrated signal generator, a pair of coil comparators, and a pair of detectors—here, two small radio receivers.

it does. I'd suggest a private line into the Bureau of Standards or a key to a radio laboratory. But Garret Genius is out to outdo the laboratory, and so he buys his equipment.

Armed with the tools of the trade, Garret assaults the modulator. He juggles the circuit con-

stants until the desired two volts appears at the right place. He measures the conversion gain, finds it right all the way across the band, and then moves to the radio-frequency stage.

Plying screwdriver, bakelite skewer, cutters, and sandpaper diligently, Garret adjusts the coils until

they align. This is another day's work of going back and forth, juggling inductances by adding or removing coil turns, and compensating each time by adjusting the trimmer condensers. He has some trouble, and discards a half a block of wire in making new coils before he is through, but he succeeds.

Garret Genius has succeeded in making his radio work—but in order to meet the challenge of his living room set, he must equal or better that power output. This is where the good, stable modulation of the signal generator comes in. At thirty per cent modulation, at four hundred cycles of pure sine wave, Garret drives his radio at five thousand microvolts input to the antenna, and observes the output.

It's fine, but how much distortion? And what is that little ragged sound? Hm-m-m. Better take a look at it.

Here goes another couple of hundred bucks for a cathode-ray oscilloscope. Oh well, Garret always wanted one anyway, and so he purchases a versatile little job with a 'scope big enough to see from more than a foot distance and at least big enough to measure the trace on, and he takes it home and looks at it. The little ragged noise, he finds, is what is commonly referred to as a "Rubber Lung." He never would have found it without the oscilloscope.

A "Rubber Lung" is a place on the normally thin-line trace where the trace spreads out like a river

passing through a lake-region in the river bed. Sometimes it is caused by parasitic oscillation in the audio-frequency amplifier, and sometimes it is caused by inadequate filtering of the second detector, which permits some of the I.F. to get into the audio.

Garret deflates the "Rubber Lung" and then goes to work on the audio system. It is necessary that Garret use a meter to measure the quality of his output. This may be possible on the oscilloscope, after much practice it is possible to estimate the standard ten per cent harmonic distortion by observing the un-sine wave shape.

But to be absolutely certain of the results, a Harmonic Distortion Meter is necessary. This gadget is a hundred dollars worth of nice cabinet and absolutely worthless for anything but measuring the percentage of distortion in an output system. Unfortunately, it can not be used in lieu of an oscilloscope in all cases: the adjustment of the output tube bias is a tricky job made simple with the oscilloscope. It becomes a long process with the distortion meter. And then, you can not use the distortion meter to good advantage on the preceding stages of the audio system: that's strictly a place for the oscilloscope.

So now we are all set up to watch Garret measure his set—at four hundred cycles per second only. To really cover the thing properly, a Beat Frequency Oscillator is needed to augment the internal 400 c.p.s. of the generator. With the B.F.O. modulating his generator,

Garret can adjust the overall response to a spectrum-curve in the audio that will give the set good tone balance.

In the above, we are assuming that Garret Genius is familiar with all of the silly little things that make life complicated for the radio engineer. He will avoid the items of danger, such as getting his audio output too close to the antenna stage thus causing oscillation. He will not put his second detector too close to the modulator tube, thus creating "Tweets" at the harmonics of the I.F. If Garret is experienced, he will have no more trouble than an experienced engineer will have.

But here's the rub. Garret will not have made any astounding discoveries. He has built a radio receiver, and he has spent about two thousand dollars to do it.

By the time that Garret Genius is equipped to handle problems of the above sort, he is no longer a Garret Genius. He is a well-equipped Consulting Engineer and will find a steady income from his consulting business. This business will keep him from tinkering with hunks of wire and bits of carbon and rods of iron. He will not revolutionize the communications industry.

Perhaps the whole thing can be summed up by asking: "What is needed in communications?"

The answer does not cover anything simple and as fundamental as the telegraph, the telephone, or the Atlantic cable. Those are a fact, and have grown complex.

Television is a laboratory fact and more complex than can be mentioned in a short article. Radio itself is well established; the inertia exhibited by everyone against changing over from the present-day broadcasting to Frequency Modulation is an example of what the Garret Genius would come up against if he were able to make any minor improvements. People will not scuttle their investments just to make Garret Genius rich.

Perhaps the one thing that would make Garret Genius rich would be some sort of personal telephone-radio system that fits the wrist like Kimball Kinnison's lens. That would fit a need, and would make Garret Genius wealthy and famous just as fame followed the discoveries of the needed telegraph, telephone, and radio.

But I can safely state that the wrist-phone will not employ the radio circuits that we know today. It can not and be worn on the wrist, for it must be energized at all times.

A dead telephone is worthless. Therefore it must be capable of being called at any and all times, and that means that whatever is used to energize the wrist-phone must be capable of sustained operation for at least the waking portion of the user's day. Men will put up with a gadget that must be plugged into the wall socket at night, but the idea of hauling around a pocket full of spare batteries would make him swear.

This supposes that the terrible cluttering of the ultra-short waves

could be circumvented, or that a new level of energy be discovered, which is especially adaptable to personal communications.

The latter is not impossible. Radio itself was unknown in Benjamin Franklin's time; not even the groundwork had been laid for it, only the basic plan was known—electrostatic electricity.

Perhaps, some day, some tinkerer will uncover some phenomena that lacks explanation, and studying it, he will lay the basis for personal-phone. He will bring forth the Garret Geniuses again; calling them from their gadgeteering to discover the many unknown, simple factors of the unknown science.

Then for a few years, Garret Genius and his brother will leave their minor discoveries of how to put a kink in a hairpin, and why it is better to put the scratchem on the back of a pack of matches. He

is a survivor type, this Garret Genius, and never will become completely extinct. But right now, Garret and his brothers are all working for laboratories, and making their strides in seven league boots since they have the right equipment to work with.

He went into partial oblivion because he was too good. Big Business said: "If Garret Genius can discover and invent in his own attic with junk and haywire, what more could he do for me in a well-equipped laboratory, with a steady income, and with plenty of tools and supplies?"

The answer is easy. And so I predict that when mankind is ready for the next Great Art, it will emerge from the laboratory and not from the garret.

But no matter where it comes from, Garret Genius himself will be responsible.

THE END.

THE ANALYTICAL LABORATORY

Decidedly crowded for space this month, we report on the January issue. Point scores ran high because of widely divided opinion, and a scattering of 8's and 7's due to the longer contents list.

Place	Story	Author	Points
1.	Technical Error	Hal Clement	2.12
2.	Ogre	Clifford D. Simak	2.35
3.	Far Centaurus	A. E. van Vogt	2.5
4.	The Leech	Malcolm Jameson	3.65
5.	As Never Was	P. Schuyler Miller	3.75

Timmins' cover for "Technical Error"—one I liked particularly myself—drew more favorable comment than usual.

In the Probability Zero division, H. O. Hoadley's yarn about the "Picture from Tokyo" won him Liar, First-Class rating, and \$20 as a New Year's present. Malcolm Jameson's "Vaccumulator" stood second, for \$10, and Jerry Shelton, better known as a musician than as a liar, collects \$5 for "Light Trap."

The Editor.

The Children's Hour

(Continued from page 98)

Clarissa loved him; they talked of marriage plans. The pattern of happiness had surely been set out clearly for them to follow.

"The aunt," he said doubtfully. "I think she must have interfered. I think . . . Clarissa seemed to slip out of my hands. She'd be busy when I phoned, or the aunt would say she was out. I was fairly sure she was lying, but what could I do?"

When she did see him, Clarissa had denied her neglect, reassuring him with shining glances and delicate, grave caresses. But she was so preoccupied. She did so little, really, and yet she seemed always absorbingly busy.

"If she was only watching a sparrow pick up crumbs," he told Dyke, "or two men arguing on the street, she gave all her attention to them and had none left over for me. So after awhile—I think about a week had gone by without my even seeing her—I decided to have it out with the aunt."

There were gaps— He remembered clearly only standing in the white hallway outside the apartment door and knocking. He remembered the door creaking softly open a little way. Only a little way. The chain had been on it, and it hung open only that narrow width, the chain glinting slightly from light within. It had been dim inside, light reflecting from wall to wall in the many mirrors, but from no source he could see. He could see,

though, that someone was moving about inside, a figure distorted by the mirrors, multiplied by them, flickering quietly as it went about its own enigmatic business within, paying no attention to his ring at the door.

"Hello," he called. "Is that you, Clarissa?"

No answer. Nothing but the silent motion inside, visible now and then in the reflecting walls. He had called the aunt by name, then.

"Is it you, Mrs.—" *What* name? He had no idea, now. But he had called her again and again, getting angrier as the motion flickered on heedlessly. "I can see you," he remembered saying, his face against the jamb. "I know you can hear me. Why don't you answer?"

Still nothing. The motion vanished inside for a moment or two, then wavered twice and was still again. He could not see what figure cast the reflection. Someone dark, moving silently over the thick dark carpets, paying no attention to the voice at the door. What a very odd sort of person the aunt must be. . . .

Abruptly he was struck with the unreality of the situation; that dim, flitting shape in the next room, and the unsatisfactory figure he cut, hesitating there on the threshold calling through the door. Why the devil did the woman insist on this mystery? She was too dominant, sudden, unexpected reaction. Clarissa's life to please herself—

Hot anger rose in him, a violent, sudden, unexpected reaction. "Clarissa!" he called. Then, as dim mo-

tion flickered in the mirrors again, he put his shoulder to the yielding panel, pushing hard.

The safety latch much have been flimsy. It gave with a crackling snap, and Lessing, off balance, staggered forward. The room with its many dark mirrors whirled vertiginously. He did not see Clarissa's aunt except as a swift, enigmatic movement in the glass, but quite suddenly he faced the inexplicable.

Gravity had shifted, both in direction and in force. His motion continued and he fell with nightmare slowness—Alice down the Rabbit Hole—in a spiraling, expanding orbit; it was like anaesthesia in its unlikeliness and the fact that it did not surprise him. The curious *quality* of the motion pushed everything else out of his mind for the moment. There was no one in the room with him; there were no mirrors; there was no room. Bodiless, an equation, a simplified ego, he fell toward—

There was Clarissa. Then he saw a burst of golden light flaming and falling against the white dark. A golden shower that enveloped Clarissa and carried her away.

Distantly, with the underbeat of his mind, he knew he should be surprised. But it was like half-sleep. It was too easy to accept things as they came, and he was too lazy to make the effort of awakening. He saw Clarissa again, moving against backgrounds sometimes only a little unfamiliar, at other times—he thought—wildly impossible—

Then an armored man was dropping down through warm sunlit air to the terrace, and the background was a park, with mountains rising far away. A woman was shrinking from him, two men had moved in front of her. Clarissa was there too. He could understand the language, though he did not know how he understood it. The armored man had a weapon of some sort lifted, and was crying, "Get back, Highness! I can't fire—too close—"

A young man in a long, belted robe of barbaric colors skipped backward, tugging at the coiled scarlet whip which was his belt. But neither of them seemed quite ready to make any aggressive moves, astonishment blanking their faces and staring eyes as they gaped at Lessing. Behind them the tall woman with the commanding, discontented face stood frozen by the same surprise. Lessing glanced around in bewilderment, meeting the incredulous stares of the girls flocking behind her. Clarissa was among them, and beyond her—beyond her—someone he could not quite remember. A dark figure, enigmatic, a little stooped. . . .

All of them stood transfixed. (All but Clarissa, perhaps, and perhaps the figure at her elbow—) The armored man's weapon was poised half lifted, the young robed man's whip unslung but trailing. They wore fantastic garments of a style and period Lessing had never heard of, and all their faces were strained and unhappy beneath the blankness of surprise, as if they

had been living under some long-standing pressure of anxiety. He never knew what it was.

Only Clarissa looked as serene as always. And only she showed no surprise. Her black eyes under a strange, elaborate coiffure met his with the familiar twinkling of many lights, and she smiled without saying anything.

A buzzing of excitement rose among the girls. The armored man said uncertainly,

"Who are you? Where did you come from? Stand back or I'll—"

"—Out of thin air!" the robed young man gasped, and gave the crimson whip a flick that made it writhe along the grass.

Lessing opened his mouth to say—well, something. The whip looked dangerous. But Clarissa shook her head, still smiling.

"Never mind," she said. "Don't bother explaining. They'll forget, you know."

If he had meant to say anything, that robbed him of all coherent thought again. It was too fantastically like . . . like . . . something familiar. Alice, that was it. Alice again, in Looking Glass Land, at the Duchess' garden party. The bright, strange costumes, the bright green grass, the same air of latent menace. In a moment someone would scream, "Off with his head!"

The robed man stepped back and braced his feet against the weight of the whip as he swung its long coil up. Lessing watched the scarlet tongue arch against the sky. ("Serpents! Serpents! There's no pleasing them!" he thought wildly.)

And then the whole world was spinning with the spin of the whip. The garden was a top, whirling faster and faster under that crimson lash. He lost his footing on the moving grass and centrifugal force flung him off into unconsciousness.

His head ached.

He got up off the hall floor slowly, pushing against the wall to steady himself. The walls were still spinning, but they slowed to a stop as he stood there swaying and feeling the bump on his forehead. His mind took a little longer to stop spinning, but once it came under control again he could see quite clearly what had happened. That chain had never broken at all. He had not fallen into the dark, mirrored room within, where the shadow of the aunt flitted quietly to and fro. The door, actually, had never been opened at all. At least, it was not open now. And the position of the doormat and the long, dark scrape on the floor made it obvious that he had tried to force the door and had slipped. His head must have cracked hard against the knob.

He wondered if such a blow could send hallucinations forward as well as backward through time from the moment of collision. Because he knew he had dreamed—he must have dreamed—that the door was open and the silent shadow moving inside.

When he called Clarissa that night he was fully determined to talk to her this time if he had to



threaten the guardian aunt with violence or arrest or whatever seemed, on the spur of the moment, most effective. He knew how humiliatingly futile such threats would sound, but he could think of no other alternative. And the need to see Clarissa was desperate now, after that curious Wonderland dream. He meant to tell her about it, and he thought the story would have some effect. Almost, in his bewilderment, he expected her to remember the part she herself had played, though he knew how idiotic the expectation was.

It was a little disconcerting, after

his fiery resolution, to hear not the aunt's voice but Clarissa's on the telephone.

"I'm coming over," he said flatly, frustrated defiance making the statement a challenge.

"Why, of course," Clarissa sounded as if they had parted only a few hours ago.

His eagerness made the trip across town seem very long. He was rehearsing the story he would tell her as soon as they were alone. The dream had been so real and vivid, though it must have passed in the flash of a second between the time his head struck the doorknob

and the time his knees struck the floor. What would she say about it? He did not know why at all, but he thought she could give him an answer to his questions, if he told her.

He rang the doorbell impatiently. As before, there was no sound from within. He rang again. No answer. Feeling eerily as if he had stepped back in time, to relive that curious dream all over again, he tried the knob, and was surprised to find the door opening to his push. No chain fastened it this time. He was looking into familiar, many-mirrored dimness as the door swung wide. While he hesitated on the threshold, not sure whether to call out or try the bell again, he saw something moving far back in the apartment, visible only in the mirrors.

For a moment the conviction that he was reliving the past made his head swim. Then he saw that it was Clarissa this time. Clarissa standing quite still and looking up with a glow of shining anticipation upon her face. It was that Christmas morning look he had caught glimpses of before, but never so clearly as now. What she looked at he could not see, but the expression was unmistakable. Something glorious was about to happen, the lovely look implied. Something very glorious, very near, very soon—

About her the air shimmered. Lessing blinked. The air turned golden and began to shower down around her in sparkling rain. This was the dream, then, he thought wildly. He had seen it all before.

Clarissa standing quietly beneath the golden shower, her face lifted, letting that shining waterfall pour over her slowly. But if it were the dream again, nothing further was to happen. He waited for the floor to spin underfoot—

No, it was real. He was watching another miracle take place, silently and gloriously, in the quiet apartment.

He had seen it in a dream; now it happened before his eyes. Clarissa in a shower of . . . of stars? Standing like Danae in a shower of gold—

Like Danae in her brazen tower, shut away from the world. Her likeness to Danae struck him with sudden violence. And that impossible rain of gold, and her look of rapt delight. What was it that poured down the shining torrent upon her? What was responsible for setting Clarissa so definitely apart from the rest of humanity, sheltering her at the cost of outraging natural laws, keeping the smooth machinery that protected her humming along its inaudible, omnipotent course? Omnipotent—yes, omnipotent as Zeus once was, who descended upon his chosen in that fabulous rain of gold.

Standing perfectly still and staring at the distant reflection in the glass, Lessing let his mind flash swifter and swifter along a chain of reasoning that left him at once gasping with incredulity and stunned with impossible conviction. For he thought at last he had the answer.

The wildly improbable answer.

He could no longer doubt that somehow, somewhere, Clarissa's life impinged upon some other world than his. And wherever the two clashed, that other world took effortless precedence. It was difficult to believe that some dispassionate force had focused so solicitously upon her. He thought the few glimpses he had been allowed to catch spoke more of some individual intelligence watching everything she did. Some one being who understood humanity as perfectly as if it were itself very nearly human. Someone in the role of literal guardian angel, shepherding Clarissa along a path toward—what?

Certainly *Someone* had not wanted Clarissa to see the street accident, and had snatched her back through space and time to a safe distance, keeping the veil about her so that she did not even guess it had happened. *Someone* had meant her to experience the delirium of fever, and had erased the summerhouse. Someone, he began to realize, was leading her almost literally by the hand through her quiet, thoughtful, shining days and nights, casting *glamour* about her so heavily that it enveloped anyone who came intimately into its range. In her long moments of absorption, when she watched such trivial things so intently, whose voice whispered inaudibly in her ear, repeating what unguessable lessons. . . .

And how did Lessing himself fit into the pattern? Perhaps, he thought dizzily, he had a part to play in it, trivial, but in its way

essential. Someone let the two of them amuse themselves harmlessly together, except when that omnipotent hand had to stretch out and push them gently back into their proper course. Clarissa's course, not Lessing's. Indeed, when anything *outré* had to happen, it was Clarissa who was protected. She did not guess the hiatus at the time of the street accident; she had scarcely noticed the disappearance of the summerhouse. Lessing did know. Lessing was shocked and stunned. But—Lessing was to forget.

At what point in her life, then, had Clarissa stepped into this mirrored prison with the strange aunt for jailor, and turned unknowing and unguessing into the path that Someone had laid out for her? Who whispered in her ear as she went so dreamily about her days, who poured down in a golden torrent about this Danae when she stood alone in her glass-walled tower?

No one could answer that. There might be as many answers as the mind could imagine, and many more beyond imagination. How could any man guess the answer to a question entirely without precedent in human experience? Well—no precedent but one.

There was Danae.

It was ridiculous, Lessing told himself at this point, to imagine any connection at all in this chance likeness. And yet—how had the legend of Danae started? Had some interloper like himself, two thousand years ago, unwittingly

glimpsed another Clarissa standing rapt and ecstatic under another shower of stars? And if that were possible, what right had Lessing to assume arbitrarily that the first of the Danae legend had been as true as what he was watching, and the last of it wholly false? There were so many, many legends of mortals whom the gods desired. Some of them must have had obvious explanations, but the Greeks were not a naive people, and there might, he thought, have been some basis of fact existing behind the allegory. There *must* have been some basis, to explain those countless stories, pointing so insistently to some definite rock of reality beyond the fantasy.

But why this long preparation which Clarissa was undergoing? He wondered, and then unbidden into his mind leaped the legend of Semele, who saw her Olympian lover in the unveiled glory of his godhood, and died of that terrible sight. Could this long, slow preparation be designed for no other purpose than to spare Clarissa from Semele's fate? Was she being led gently, inexorably from knowledge to knowledge, so that when the god came down to her in his violence and his splendor, she could endure the glory of her destiny? Was this the answer behind that look of shining anticipation he had seen so often on her face?

Sudden, scalding jealousy enveloped him. Clarissa, glimpsing already and without guessing it, the splendor to come in which he himself could have no part . . .

Lessing struck the door a resounding blow and called, "*Clarissa!*"

In the mirror he saw her start a little and turn. The shower wavered about her. Then she moved out of sight, except for a golden flickering among the mirrors, as she approached the door.

Lessing stood there, shaking and sweating with intolerable confusion. He knew his deductions were ridiculous and impossible. He did not really believe them. He was leaping to conclusions too wild to credit, from premises too arbitrary to consider in any sane moment. Granted that inexplicable things were happening, still he had no logical reason to assume a divine lover's presence. But someone, *Someone* stood behind the events he had just been rehearsing, and of that Someone, whoever and whatever it might be, Lessing was agonizingly jealous. For those plans did not include himself. He knew they never could. He knew—

"Hello," said Clarissa softly. "Did I keep you waiting? The bell must be out of order—I didn't hear you ring. Come on in."

He stared. Her face was as serene as always. Perhaps a little glow of rapture still shone in her eyes, but the shower of gold was gone and she gave no outward sign of remembering it.

"What were you doing?" he asked, his voice slightly unsteady.

"Nothing," said Clarissa.

"But I saw you!" he burst out. "In the mirrors—I saw you! Clarissa, what—"

Gently and softly a—a hand?—was laid across his mouth. Nothing tangible, nothing real. But the words did not come through. It was silence itself, a thick gag of it, pressing against his lips. There was one appalling, mind-shaking moment of that gag, and then Lessing knew that Someone was right, that he must not speak, that it would be cruel and wrong to say what he had meant to say.

It was all over in an instant, so suddenly that afterward he was not sure whether a gag had actually touched his lips, or whether a subtler gag of the mind had silenced him. But he knew he must say nothing, neither of this nor of that strange, vivid dream in which he had met Clarissa. She did not guess. She must not know—yet.

He could feel the sweat rolling down his forehead, and his knees felt shaky and his head light. He said, from a long way off,

"I . . . I don't feel well, Clarissa. I think I'd better go—"

The light above Dyke's desk swung gently in a breeze from the shaded window. Outside a distant train's hooting floated in across the post grounds, made immeasurably more distant by the darkness. Lessing straightened in his chair and looked around a little dizzily, startled at the abrupt transition from vivid memory to reality. Dyke leaned forward above his crossed arms on the desk and said gently,

"And did you go?"

Lessing nodded. He was far beyond any feeling now of incredulity

or reluctance to accept his own memories. The things he was remembering were more real than this desk or the soft-voiced man behind it.

"Yes. I had to get away from her and straighten my mind out. It was so important that she should understand what was happening to her, and yet I couldn't tell her about it. She was—asleep. But she had to be wakened before it was too late. I thought she had a right to know what was coming, and I had a right to have her know, let her make her choice between me and—it. Him. I kept feeling the choice would have to be made soon, or it would be too late. *He* didn't want her to know, of course. He meant to come at the right moment and find her unquestioning, prepared for him. It was up to me to rouse her and make her understand before that moment."

"You thought it was near, then?"

"Very near."

"What did you do?"

Lessing's eyes went unfocused in remembrance. "I took her out dancing," he said, "the next night. . ."

She sat across from him at a table beside a little dance floor, slowly twirling a glass of sherry and bitters and listening to the noises of a bad orchestra echoing in the small, smoky room. Lessing was not quite sure why he had brought her here, after all. Perhaps he hoped that though he could not speak to her in words of all he suspected and feared, he could rouse her enough out of her serene

absorption so that she might notice for herself how far her own world differed from the normal one. Here in this small, inclosed space shaking with savage rhythms, crowded by people who were deliberately giving themselves up to the music and the liquor, might not that serene and shining armor be pierced a little, enough to show what lay inside?

Lessing was tinkling the ice in his third Collins and enjoying the pleasant haze that just enough alcohol lent to the particular, shining haze that always surrounded Clarissa. He would not, he told himself, have any more. He was far from drunk, certainly, but there was intoxication in the air tonight, even in this little, noisy, second-rate nightclub. The soaring music had a hint of marijuana delirium in it; the dancers on the hot, crowded floor exhaled excitement.

And Clarissa was responding. Her great black eyes shone with unbearable brightness, and her laughter was bright and spontaneous too. They danced in the jostling mob, not feeling jostled at all because of the way the music caught them up on its rhythms. Clarissa was talking much more than usual this evening, very gayly, her body resilient in his arms.

As for himself—yes, he was drunk after all, whether on the three drinks or on some subtler, more powerful intoxication he did not know. But all his values were shifting deliciously toward the irresponsible, and his ears rang with inaudible music. Now nothing

could overpower him. He was not afraid of anything or anyone at all. He would take Clarissa away—clear away from New York and her jailor aunt, and that shining Someone who drew nearer with every breath.

There began to be gaps in his memory after awhile. He could not remember how they had got out of the nightclub and into his car, or just where they intended to go, but presently they were driving up the Henry Hudson Parkway with the river sliding darkly below and the lights of Jersey lying in wreaths upon the Palisades.

They were defying the—the pattern. He thought both of them knew that. There was no place in the pattern for this wild and dizzying flight up the Hudson, with the cross-streets reeling past like spokes in a shining wheel. Clarissa, leaning back in the bend of his free arm, was in her way as drunk as he, on nothing more than two sherries and the savage rhythms of the music, the savage excitement of this strange night. The intoxication of defiance, perhaps, because they were running away. From something—from Someone. (That was impossible, of course. Even in his drunkenness he knew that. But they could try—)

"Faster," Clarissa urged, moving her head in the crook of his arm. She was glitteringly alive tonight as he had never seen her before. Very nearly awake, he thought in the haze of his reeling mind. Very nearly ready to be told

what it was he must tell her. The warning—

Once he pulled up deliberately beneath a street light and took her in his arms. Her eyes and her voice and her laughter flashed and sparkled tonight, and Lessing knew that if he thought he had loved her before, this new Clarissa was so enchanting that . . . that . . . yes, even a god might lean out from Olympus to desire her. He kissed her with an ardor that made the city whirl solemnly around them. It was delightful to be drunk and in love, and kissing Clarissa under the eyes of the jealous gods. . .

There was a feeling of . . . of wrongness in the air as they drove on. The pattern strove to right itself, to force them back into their ordained path. He could feel its calm power pressing against his mind. He was aware of traffic imperceptibly edging him into streets that led back toward the apartment they had left. He had to wrench himself out of it, and then presently the northbound way would be closed off for repairs, and a detour went off along other streets that took them south again. Time after time he found himself driving past descending street numbers toward downtown New York, and swung around the block in bewildered determination not to return.

The pattern must be broken. It *must* be. Hazily he thought that if he could snap one thread of it, defy that smooth, quiet power in even so small a way as this, he would have accomplished his purpose. But alone he could not have

done it. The omnipotent machinery humming in its course would have been irresistible—he would have obeyed it without knowing he obeyed—had not Clarissa shared his defiance tonight. There seemed to be a power in her akin to the power of that omnipotence, as if she had absorbed some of it from long nearness to the source.

Or was it that Someone stayed his hand rather than strike her forcibly back to her place in the pattern, rather than let her guess—yet—the extent of his power?

"Turn," said Clarissa. "Turn around. We're going wrong again."

He struggled with the wheel. "I can't . . . I can't," he told her, almost breathless. She gave him a dazzling dark glance and leaned over to take the wheel herself.

Even for her it was hard. But slowly she turned the car, while traffic blared irritably behind them, and slowly they broke out of the pattern's grip again and rounded another corner, heading north, the lights of Jersey swimming unfocused in the haze of their delirium.

This was no normal drunkenness. It was increasing by leaps and bounds. This, thought Lessing dimly, is *His* next step. He won't let her see what he's doing, but he knows he's got to stop us now, or we'll break the pattern and prove our independence.

The tall, narrow buildings shoudering together along the streets were like tall trees in a forest, with windows for motionless leaves. No two windows on the same level, or

quite alike. Infinite variety with infinitesimal differences, all of them interlacing and glimmering as they drove on and on through the stony forest. Now Lessing could see among the trees, and between them, not transparently but as if through some new dimension. He could see the streets that marked off this forest into squares and oblongs, and his dazed mind remembered another forest, checkered into squares—Looking Glass Land.

He was going south again through the forest.

"Clarissa—help me," he said distantly, wrestling again with the wheel. Her small white hands came out of the dark to cover his.

A shower of light from a flickering window poured down upon them, enveloping Clarissa as Zeus enveloped Danae. The jealous god, the jealous god— Lessing laughed and smacked the wheel in senseless triumph.

There was a light glimmering ahead through the trees. He would have to go softly, he warned himself, and tiptoed forward over the . . . the cobbled road. Without surprise he saw that he was moving on foot through a forest in darkness, quite alone. He was still drunk. Drunker than ever, he thought with mild pride, drunker, probably, than any mortal ever was before. Any mortal. The gods, now—

People were moving through the trees ahead. He knew they must not see him. It would shock them considerably if they did; he remembered the garishly dressed people

of his other dream, and the young man with the whip. No, it would be better to stay hidden this time if he could. The forest was wheeling and dipping around him behind a haze of obscurity, and nothing had very much coherence. The ringing in his ears was probably intoxication, not actual sound.

The people were somberly clad in black, with black hoods that covered their hair and framed pale, intolerant faces. They were moving in a long column through the trees. Lessing watched them go by for what seemed a long while. Some of the women carried work bags over their arms and knitted as they walked. A few of the men read from small books and stumbled now and then on the cobblestones. There was no laughter.

Clarissa came among the last. She had a gay little face beneath the black cap, gayer and more careless than he had ever seen her in this . . . this world. She walked lightly, breaking into something like a dance step occasionally that called down upon her the frowns of those who walked behind. She did not seem to care.

Lessing wanted to call to her. He wanted to call so badly that it seemed to him she sensed it, for she began to fall behind, letting first one group pass her and then another, until she walked at the very end of the column. Several girls in a cluster looked back a few times and giggled a little, but said nothing. She fell farther back. Presently the procession turned a corner and Clarissa stopped in the mid-

dle of the road, watching them go. Then she laughed and performed a solemn little pirouette on one toe, her black skirts swinging wide around her.

Lessing stepped from behind his tree and took a step toward her, ready to speak her name. But he was too late. Someone else was already nearer than he. Someone else—Clarissa called out gayly in a language he did not know, and then there was a flash of crimson through the trees and a figure cloaked from head to heels in bright red came up to her and took her into its embrace, the red folds swinging forward to infold them both. Clarissa's happy laughter was smothered beneath the stooping hood.

Lessing stood perfectly still. It might be another woman, he told himself fiercely. It might be a sister or an aunt. But it was probably a man. Or—

He squinted slightly—nothing focused very well in his present state, and things tended to slip sideways when he tried to fix his eyes upon them—but this time he was almost sure of what he saw. He was almost sure that upon Clarissa's lifted face in the dimness of the woods a light was falling softly—from the hood above her. A light, glowing from within the hood. A shower of light. Danae, in her shower of gold. . .

The woods tilted steeply and turned end for end. Lessing was beyond surprise as he fell away, spinning and whirling through darkness, falling farther and far-

ther from Clarissa in the woods. Leaving Clarissa alone in the embrace of her god.

When the spinning stopped he was sitting in his car again, with traffic pouring noisily past on the left. He was parked, somewhere. Double-parked, with the motor running. He blinked.

"I'll get out here," Clarissa told him matter-of-factly. "No, don't bother. You'll never find a parking place, and I'm so sleepy. Good night, darling. Phone me in the morning."

He could do nothing but blink. The dazzle of her eyes and her smile was a little blinding, and that haze still diffused all his efforts to focus upon her face. But he could see enough. They were exactly where they had started, at the curb before her apartment house.

"Good night," said Clarissa again, and the door closed behind her.

There was silence in the office after Lessing's last words. Dyke sat waiting quietly, his eyes on Lessing's face, his shadow moving a little on the desktop under the swinging light. After a moment Lessing said, almost defiantly,

"Well?"

Dyke smiled slightly, stirring in his chair. "Well?" he echoed.

"What are you thinking?"

Dyke shook his head. "I'm not thinking at all. It isn't time yet for that—unless the story ends there. It doesn't, does it?"

Lessing looked thoughtful. "No.

Not quite. We met once more."

"Only once?" Dyke's eyes brightened. "That must be when your memory went, then. That's the most interesting scene of all. Go on—what happened?"

Lessing closed his eyes. His voice came slowly, as if he were remembering bit by bit each episode of the story he told.

"The phone woke me next morning," he said. "It was Clarissa. As soon as I heard her voice I knew the time had come to settle things once and for all—if I could. If I were allowed. I didn't think—

He—would let me talk it out with her, but I knew I'd have to try. She sounded upset on the phone. Wouldn't say why. She wanted me to come over right away."

She was at the door when he came out of the elevator, holding it open for him against a background of mirrors in which no motion stirred. She looked fresh and lovely, and Lessing marveled again, as he had marveled on waking, that the extraordinary drunkenness of last night had left no ill effects with either of them this morning. But she looked troubled,



too; her eyes were too bright, with a blinding blackness that dazzled him, and the sweet serenity was gone from her face. He exulted at that. She was awakening, then, from the long, long dream.

The first thing he said as he followed her into the apartment was, "Where's your aunt?"

Clarissa glanced vaguely around. "Oh, out, I suppose. Never mind her. Jim, tell me—did we do something wrong last night? Do you remember what happened? Everything?"

"Why I . . . I think so." He was temporizing, not ready yet in spite of his decision to plunge into these deep waters.

"What happened, then? Why does it worry me so? Why can't I remember?" Her troubled eyes searched his face anxiously. He took her hands. They were cold and trembling a little.

"Come over here," he said. "Sit down. What's the matter, darling? Nothing's wrong. We had a few drinks and took a long ride, don't you remember? And then I brought you back here and you said good night and went in."

"That isn't all," she said with conviction. "We were—fighting something. It was wrong to fight—I never did before. I never knew it was there until I fought it last night. But now I do know. What was it, Jim?"

He looked down at her gravely, a tremendous excitement beginning to well up inside him. Perhaps, somehow, they had succeeded last night in breaking the spell. Per-

haps *His* grip had been loosened after all, when they defied the pattern even as briefly as they did.

But this was no time for temporizing. Now, while the bonds were slack, was the moment to strike hard and sever them if he could. Tomorrow she might have slipped back again into the old distraction that shut him out. He must tell her now— Together they might yet shake off the tightening coils that had been closing so gently, so inexorably about her.

"Clarissa," he said, and turned on the sofa to face her. "Clarissa, I think I'd better tell you something." Then a sudden, unreasoning doubt seized him and he said irrelevantly, "Are you sure you love me?" It was foolishly important to be reassured just then. He did not know why.

Clarissa smiled and leaned forward into his arms, putting her cheek against his shoulder. From there, unseen, she murmured, "I'll always love you, dear."

For a long moment he did not speak. Then, holding her in one arm, not watching her face, he began.

"Ever since we met, Clarissa darling, things have been happening that—worried me. About you. I'm going to tell you if I can. I think there's something, or someone, very powerful, watching over you and forcing you into some course, toward some end I can't do more than guess at. I'm going to try to tell you exactly why I think so, and if I have to stop without finishing, you'll know I don't

stop on purpose. I'll have been stopped."

Lessing paused, a little awed at his own daring in defying that Someone whose powerful hand he had felt hushing him before. But no pad of silence was pressed against his lips this time and he went on wonderingly, expecting each word he spoke to be the last. Clarissa lay silent against his shoulder, breathing quietly, not moving much. He could not see her face.

And so he told her the story, very simply and without references to his own bewilderment or to the wild conclusions he had reached. He told her about the moment in the park when she had been drawn away down a funnel of luminous rings. He reminded her of the vanishment of the summerhouse. He told of the dreamlike episode on the hallway here, when he called irrationally into the mirrored dimness, or thought he called. He told her of their strange, bemused ride uptown the night before, and how the pattern swung the streets around under their wheels. He told her of his two vivid dreams through which she—yet not she—had moved so assuredly. And then, without drawing any conclusions aloud, he asked her what she was thinking.

She lay still a moment longer in his arms. Then she sat up slowly, pushing back the smooth dark hair and meeting his eyes with the feverish brilliance that had by now become natural to her.

"So that's it," she said dreamily, and was silent.

"What is?" he asked almost irritably, yet suffused now with a sense of triumph because the Someone had not silenced him after all, had slipped this once and let the whole story come out into open air at last. Now at last he thought he might learn the truth.

"Then I was right," Clarissa went on. "I *was* fighting something last night. It's odd, but I never even knew it was there until the moment I began to fight it. Now I know it's always been there. I wonder—"

When she did not go on, Lessing said bluntly, "Have you ever realized that . . . that things were different for you? Tell me, Clarissa, what is it you think of when you . . . when you stand and look at something trivial so long?"

She turned her head and gave him a long, grave look that told him more plainly than words that the whole spell was not yet dissolved. She made no answer to the question, but she said,

"For some reason I keep remembering a fairy story my aunt used to tell me when I was small. I've never forgotten it, though it certainly isn't much of a story. You see—"

She paused again, and her eyes brightened as he looked, almost as if lights had gone on behind them in a dark room full of mirrors. The look of expectancy which he knew so well tightened the lines of her face for a moment, and she smiled delightedly, without apparent reason and not really seeming to know she smiled.

"Yes," she went on. "I remember it well. Once upon a time, in a kingdom in the middle of the forest, a little girl was born. All the people in the country were blind. The sun shone so brightly that none of them could see. So the little girl went about with her eyes shut too, and didn't even guess that such a thing as sight existed.

"One day as she walked alone in the woods she heard a voice beside her. 'Who are you?' she asked the voice, and the voice replied, 'I am your guardian.' The little girl said, 'But I don't need a guardian. I know these woods very well. I was born here.' The voice said, 'Ah, you were born here, yes, but you don't belong here, child. You are not blind like the others.' And the little girl exclaimed, 'Blind? What's that?'

"I can't tell you yet," the voice answered, 'but you must know that you are a king's daughter, born among these humble people as our king's children sometimes are. My duty is to watch over you and help you to open your eyes when the time comes. But the time is not yet. You are too young—the sun would blind you. So go on about your business, child, and remember I am always here beside you. The day will come when you open your eyes and see.'

Clarissa paused. Lessing said impatiently, "Well, did she?"

Clarissa sighed. "My aunt never would finish the story. Maybe that's why I've always remembered it."

Lessing started to speak. "I

don't think—" But something in Clarissa's face stopped him. An exalted and enchanted look, that Christmas-morning expression carried to fulfillment, as if the child were awake and remembering what many-lighted, silver-spangled glory awaited him downstairs. She said in a small, clear voice,

"It's true. Of course it's true! All you've said, and the fairy tale too. Why, I'm the king's child. Of course I am!" And she put both hands to her eyes in a sudden childish gesture, as if half expecting the allegory of blindness to be literal.

"Clarissa!" Lessing said.

She looked at him with wide, dazzled eyes that scarcely knew him. And for a moment a strange memory came unbidden into his mind and brought terror with it. Alice, walking with the Fawn in the enchanted woods where nothing has a name, walking in friendship with her arm about the Fawn's neck. And the Fawn's words when they came to the edge of the woods and memory returned to them both. How it started away from her, shaking off the arm, wildness returning to the eyes that had looked as serenely into Alice's as Clarissa had looked into his. "*Why—I'm a Fawn,*" it said in astonishment. "*And you're a Human Child!*"

Alien species.

"I wonder why I'm not a bit surprised?" murmured Clarissa. "I must have known it all along, really. Oh, I wonder what comes next?"

Lessing stared at her, appalled.

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She was very like a child now, too enraptured by the prospect of—of what?—to think of any possible consequences. It frightened him to see how sure she was of splendor to come, and of nothing but good in that splendor. He hated to mar the look of lovely anticipation on her face, but he must. He had wanted her to help him fight this monstrous possibility if she could bring herself to accept it at all. He had not expected instant acceptance and instant rapture. She *must* fight it—

"Clarissa," he said, "think! If it's true . . . and we may be wrong . . . don't you see what it means? He . . . they . . . won't let us be together, Clarissa. We can't be married."

Her luminous eyes turned to him joyously.

"Of course we'll be married, darling. *They're* only looking after me, don't you see? Not hurting me, just watching. I'm sure they'll let us marry whenever we like. I'm sure they'd never do anything to hurt me. Why darling, for all we know you may be one of us, too. I wonder if you are. It almost stands to reason, don't you think? Or why would They have let us fall in love? Oh, darling—"

Suddenly he knew that someone was standing behind him. *Someone*— For one heart-stopping moment he wondered if the jealous god himself had come down to claim Clarissa, and he dared not turn his head. But when Clarissa's shining eyes lifted to the face beyond his, and showed no surprise,

he felt a little reassurance.

He sat perfectly still. He knew he could not have turned if he wanted. He could only watch Clarissa, and though no words were spoken in that silence, he saw her expression change. The rapturous joy drained slowly out of it. She shook her head, bewilderment and disbelief blurring the ecstasy of a moment before.

"No?" she said to that standing someone behind him. "But I thought— Oh, no, you mustn't! You wouldn't! It isn't fair!" And the dazzling dark eyes flooded with sudden tears that doubled their shining. "You can't, you can't!" sobbed Clarissa, and flung herself forward upon Lessing, her arms clasping his neck hard as she wept incoherent protest upon his shoulder.

His arms closed automatically around her while his mind spun desperately to regain its balance. What had happened? Who—

Someone brushed by him. The aunt. He knew that, but with no sense of relief even though he had half-expected that more awesome Someone at whose existence he could still only guess.

The aunt was bending over them, pulling gently at Clarissa's shaking shoulder. And after a moment Clarissa's grip on his neck loosened and she sat up obediently, though still catching her breath in long, uneven sobs that wrung Lessing's heart. He wanted desperately to do or say whatever would comfort her most quickly, but his mind and his body were both oddly slowed,

as if there were some force at work in the room which he could not understand. As if he were moving against the momentum of that singing machinery he had fancied he sensed so often—moving against it, while the other two were carried effortlessly on.

Clarissa let herself be pulled away. She moved as bonelessly as a child, utterly given up to her grief, careless of everything but that. The tears streaked her cheeks and her body drooped forlornly. She held Lessing's hands until the last, but when he felt her fingers slipping from his the loss of contact told him, queerly, as nothing else quite had power to tell, that this was a final parting. They stood apart over a few feet of carpet, as if inexorable miles lay between them. Miles that widened with every passing second. Clarissa looked at him through her tears, her eyes unbearably bright, her lips quivering, her hands still outstretched and curved from the pressure of his clasp.

This is all. You have served your purpose—now go. Go and forget.

He did not know what voice had said it, or exactly in what words, but the meaning came back to him clearly now. *Go and forget.*

There was strong music in the air. For one last moment he stood in a world that glittered with beauty and color because it was Clarissa's, glittered even in this dark apartment with its many, many mirrors. All about him he could see reflecting Clarissas from every angle of grief and parting,

moving confusedly as she let her hands begin to drop. He saw a score of Clarissas dropping their curved hands—but he never saw them fall. One last look at Clarissa's tears, and then . . . and then—
Lethe.

Dyke let his breath out in a long sigh. He leaned back in his creaking chair and looked at Lessing without expression under his light eyebrows. Lessing blinked stupidly back. An instant ago he had stood in Clarissa's apartment; the touch of her fingers was still warm in his hands. He could hear her caught breath and see the reflections moving confusedly in the mirrors around them—

"Wait a minute," he said. "Reflections—Clarissa—I almost remembered something just then—" He sat up and stared at Dyke without seeing him, his brow furrowed. "Reflections," he said again. "Clarissa—lots of Clarissas—but no aunt! I was looking at two women in the mirror, but I didn't see the aunt! I never saw her—not once! And yet I . . . wait . . . the answer's there, you know . . . right there, just in reach, if I could only—"

Then it came to him in a burst of clarity. Clarissa had seen it before him; the whole answer lay in that legend she had told. The Country of the Blind! How could those sightless natives hope to see the king's messenger who watched over the princess as she walked that enchanted wood? How could he remember what his mind had never



been strong enough to comprehend? How could he have *seen* that guardian except as a presence without shape, a voice without words, moving through its own bright sphere beyond the sight of the blind?

"Cigarette?" said Dyke, creaking his chair forward.

Lessing reached automatically across the desk. There was no further sound but the rustle of paper and the scratch of a match, for a little while. They smoked in

silence, eying one another. Outside feet went by upon gravel. Men's voices called distantly, muffled by the night. Crickets were chirping, omnipresent in the dark.

Presently Dyke let down the front legs of his chair with a thump and reached forward to grind out his unfinished cigarette.

"All right," he said. "Now—are you still too close, or can you look at it objectively?"

Lessing shrugged. "I can try."

"Well, first we can take it as understood—at least for the moment

—that such things as these just don't happen. The story's full of holes, of course. We could tear it to pieces in ten minutes if we tried."

Lessing looked stubborn. "Maybe you think—"

"I haven't begun to think yet. We haven't got to the bottom of the thing, naturally. I don't believe it really happened exactly as you remember. Man, how could it? The whole story's still dressed up in a sort of allegory, and we'll have to dig deeper still to uncover the bare facts. But just as it stands—what a problem! Now I wonder—"

His voice died. He shook out another cigarette and scratched a match abstractedly. Through the first cloud of exhaled smoke he went on,

"Take it all as read, just for a minute. Unravel the allegory in the allegory—the king's daughter born in the Country of the Blind. You know, Lessing, one thing strikes me that you haven't noticed yet. Ever think how completely childish Clarissa seems? Her absorption in trivial things, for instance. Her assumption that the forces at work about her must be protective, parental. Yes, even that glow you spoke of that affected everything you saw and heard when you were with her. A child's world is like that. Strong, clear colors. Nothing's ugly because they have no basis for comparison. Beauty and ugliness mean nothing to a child. I can remember a bit from my own childhood—that peculiar enchantment over whatever interested me.

Wordsworth, you know—'Heaven lies about us in our infancy,' and all the rest. And yet she was adult enough, wasn't she?' Past twenty, say?"

He paused, eying the tip of his cigarette. "You know," he said, "it sounds like a simple case of arrested development, doesn't it? Now, now, wait a minute! I only said *sounds* like it. You've got sense enough to recognize a moron when you see one. I don't say Clarissa was anything like that. I'm just getting at something—"

"I'm thinking about my own little boy. He's eleven now, and getting adjusted, but when he first started school he had an I. Q. away above the rest of the class, and they bored him. He didn't want to play with the other kids. Got to hanging around the house reading until my wife and I realized something had to be done about it. High I. Q. or not, a kid needs other kids to play with. He'll never learn to make the necessary social adjustments unless he learns young. Can't grow up psychically quite straight unless he grows up with his own kind. Later on a high I. Q. will be a fine thing, but right now it's almost a handicap to the kid." He paused. "Well, see what I mean?"

Lessing shook his head. "I can't see anything. I'm still dizzy."

"Clarissa," said Dyke slowly, "might—in the allegory, mind you, not in any real sense—be the king's daughter. She might have been born of . . . well, call it royal blood . . . into a race of inferiors, and never guess it until she began to

develop beyond their level. Maybe the . . . the king felt the same as I did about my own child—she needed the company of inferiors . . . of children—while she was growing up. She couldn't develop properly among—adults. Adults, you see, so far developed beyond anything we know that when they're in the same room with you, you can't even remember what they looked like."

It took Lessing a good minute after Dyke stopped speaking to realize just what he meant. Then he sat up abruptly and said, "Oh, no! It can't be that. Why, I'd have known—"

"You ought," Dyke remarked abstractedly, "to watch my kid play baseball. While he's playing, it's the most important thing in life. The other kids never guess he has thoughts that go beyond the game."

"But . . . but the shower of gold, for instance," protested Lessing. "The presence of the god . . . even the—"

"Wait a minute! Just wait, now. You remember yourself that you jumped at conclusions about the god. Made him up completely out of a glimpse of what looked like a golden shower, and the memory of the Danae legend, and the feeling of a presence and a purpose behind what happened. If you'd seen what looked like a burning bush instead of a shower, you'd have come up with a completely different theory involving Moses, maybe. As for the presence and the visions—" Dyke paused and gave him a nar-

rowed look. He hesitated a moment. "I'm going to suggest something about those later on. You won't like it. First, though, I want to follow this . . . this allegory on through. I want to explain fully what *might* lie beyond this obvious theory on Clarissa. Remember, I don't take it seriously. But neither do I want to leave it dangling. It's fascinating, just as it stands. It seems very clearly to indicate—in the allegory—the existence of *homo superior*, here and now, right among us."

"Supermen?" Lessing echoed. With an obvious effort he forced his mind into focus and sat up straighter, looking at Dyke with a thoughtful frown. "Maybe. Or maybe— Lieutenant, do you ever read Cabell? In one of his books somewhere I think he has a character refer to a sort of super-race that impinges on ours with only one . . . one facet. He uses the analogy of geometry, and suggests that the other race might be represented by cubes that show up as squares on the plane geometric surface of our world, though in their own they have a cubic mass we never guess." He frowned more deeply, and was silent.

Dyke nodded. "Something like that, maybe. Fourth dimension stuff—people restricting themselves into our world temporarily, and for a purpose." He pulled at his lower lip and then repeated, "For a purpose. That's humiliating! I'm glad I don't really believe it's true. Even considering the thing academically is embarrassing enough.

Homo superior, sending his children among us—to play.”

He laughed. “Run along, children! I wonder if you see what I’m driving at. I’m not sure myself, really. It’s too vague. My mind’s human, so it’s limited. I’m set in patterns of anthropomorphic thinking, and my habit-patterns handicap me. We have to feel important. That’s a psychological truism. That’s why Mephistopheles was always supposed to be interested in buying human souls. He wouldn’t have wanted them, really—impalpables, intangibles, no use at all to a demon with a demon’s powers.”

“Where do the demons come in?”

“Nowhere. I’m just talking.

Homo superior would be another race without any human touching points at all—as adults. Demons, in literature, were given human emotions and traits. Why? Muddy thinking. They wouldn’t have them, any more than a superman would. Tools!” Dyke said significantly, and sat staring at nothing.

“Tools?”

“This . . . this world.” He gestured. “What the devil do we know about it? We’ve made atom-smashers and microscopes. And other things. Kid stuff, toys. My boy can use a microscope and see bugs in creek water. A doctor can take the same microscope, use stains, isolate a germ and do something about it. That’s maturity. All this world, all this—matter—around us, might be simply tools that we’re using like kids. A super-race—”

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"By definition, wouldn't it be too super to understand?"

"In toto. A child can't completely comprehend an adult. But a child can more or less understand another child—which is reduced to the same equation as his own, or at least the same common denominator. A superman would have to grow. He wouldn't start out mature. Say the adult human is expressed by x. The adult superman is xy. A superchild—undeveloped, immature—is $\frac{xy}{y}$. Or in other words, the equivalent of a mature specimen of *homo sapiens*. *Sapiens* reaches senility and dies. *Superior* goes on to maturity, the true superman. And that maturity—"

They were silent for awhile.

"They might impinge on us a little, while taking care of their own young," Dyke went on presently. "They might impose amnesia on anyone who came too close, as you did—might have done. Remember Charles Fort? Mysterious disappearances, balls of light, spaceships, Jersey devils. That's a side issue. The point is, a superchild could live with us, right here and now, unsuspected. It would appear to be an ordinary adult human. Or if not quite ordinary—certain precautions might be taken." Again he fell silent, twirling a pencil on the desk.

"Of course, it's inconceivable," he went on at last. "All pure theory. I've got a much more plausible explanation, though as I warned you, you won't like it."

Lessing smiled faintly. "What is it?"

"Remember Clarissa's fever?"

"Of course. Things were different after that—much more in the open. I thought—maybe she saw things in the delirium for the first time that she couldn't be allowed to see head-on, in normal life. The fever seemed to be a necessity. But of course—"

"Wait. Just possibly, you know, you may have the whole thing by the wrong end. Look back, now. You two were caught in a rain-storm, and Clarissa came out of it with a delirium, right? And after that, things got stranger and stranger. Lessing, did it ever occur to you that you were both caught in that storm? Are you perfectly sure that it wasn't *yourself* who had the delirium?"

Lessing sat quite still, meeting the narrowed gaze. After a long moment he shook himself slightly.

"Yes," he said. "I'm sure."

Dyke smiled. "All right. Just thought I'd ask. It's one possibility, of course." He waited.

Presently Lessing looked up.

"Maybe I did have a fever," he admitted. "Maybe I imagined it all. That still doesn't explain the forgetfulness, but skip that. I know one way to settle at least part of the question."

Dyke nodded. "I wondered if you'd want to do that. I mean, right away."

"Why not? I know the way back. I'd know it blindfolded. Why, she may have been waiting for me all this time! There's noth-

ing to prevent me going back to-morrow."

"There's a little matter of a pass," Dyke said. "I believe I can fix that up. But do you think you want to go so soon, Lessing? Without thinking things over? You know, it's going to be an awful shock if you find no apartment and no Clarissa. And I'll admit I won't be surprised if that's just what you do find. I think this whole thing's an allegory we haven't fathomed yet. We may never fathom it. But—"

"I'll have to go," Lessing told him. "Don't you see that? We'll never prove anything until we at least rule out the most obvious possibility. After all, I might be telling the simple truth!"

Dyke laughed and then shrugged faintly.

Lessing stood before the familiar door, his finger hesitating on the bell. So far, his memory had served him with perfect faith. Here was the corridor he knew well. Here was the door. Inside, he was quite sure, lay the arrangement of walls and rooms where once Clarissa moved. She might not be there any more, of course. He must not be disappointed if a strange face answered the bell. It would disprove nothing. After all, two years had passed.

And Clarissa had been changing rather alarmingly when he saw her last. The fever had seemed to speed things up.

Well, suppose it were all true. Suppose she belonged to the super-

race. Suppose she impinged upon Lessing's world with only one facet of her four-dimensional self. With that one facet she had loved him—they had that much of a meeting ground. Let her have a deeper grasp, then, than he could ever comprehend; still she could not yet be fully developed into her world of solid geometry, and while one facet remained restricted into the planar world which was all he knew, she might, he thought, still love him. He hoped she could. He remembered her tears. He heard again the sweet, shy, ardent voice saying, "I'll always love you—"

Firmly he pressed the bell.

The room was changed. Mirrors still lined it, but not—not as he remembered. They were more than mirrors now. He had no time to analyze the change, for a motion stirred before him.

"Clarissa—" he said. And then, in the one brief instant of awareness that remained to him, he knew at last how wrong he had been.

He had forgotten that four dimensions are not the outermost limits of conceivable scope. Cabell had unwittingly led him astray: there are dimensions in which a cube may have many more than six sides. Clarissa's dimension—

Extensions are possible in dimensions not entirely connected with space—or rather, space is merely a medium through which these extensions may be made. And because humans live upon a three-dimensional planet, and because all planets in this continuum are three-dimensional, no psychic tesseract is

possible—except by extensions.

That is, a collection of chromosomes and genes, arranged on earth and here conceived, cannot in themselves form the matrix for a superman. Nor can a battery give more than its destined voltage. But if there are three, six, a dozen batteries of similar size, and if they are connected in series—

Until they are connected, until the linkage is complete, each is an individual. Each has its limitations. There are gropings, guided fumbings through the dark, while those in charge seek to help the scattered organism in fulfilling itself. And therefore the human mind can comprehend the existence of a superbeing up to the point that the connection is made and the batteries become one unit, of enormous potential power.

On earth there was Clarissa and her nominal aunt—who could not be comprehended at all.

On a remote planet in Cygnae Taurus, there was a Clarissa too, but her name there was something like Ezandora, and her mentor was a remote and cryptic being who was accepted by the populace as a godling.

On Seven Million Four Twenty Eight of Center Galaxy there was Jandav, who carried with her a small crystal through which her guidance came.

In atmospheres of oxygen and halogen, in lands ringed with the shaking blaze of crusted stars beyond the power of our telescopes—beneath water, and in places of cold and darkness and void, the matrix

repeated itself, and by the psychic and utterly unimaginable power and science of *homo superior*, the biological cycle of a race more than human ran and completed itself and began again. Not entirely spontaneously, at the same time, in many worlds, the pattern that was Clarissa was conceived and grew. The batteries strengthened.

Or to use Cabell's allegory, the Clarissa Pattern impinged one facet upon earth, but it was not one facet out of a possible six—but one out of a possible infinity of facets. Upon each face of that unimaginable geometric shape, a form of Clarissa moved and had independent being, and gradually developed. Learned and was taught. Reached out toward the center of the geometric shape that was—or one day would be—the complete Clarissa. One day, when the last mirror-facet sent inward to the center its matured reflection of the whole, when the many Clarissas, so to speak, clasped hands with themselves and fused into perfection.

Thus far we can follow. But not after the separate units become the complete and tremendous being toward which the immaturity of Clarissa on so many worlds was growing. After that, the destiny of *homo superior* has no common touching point with the understanding of *homo sapiens*. We knew them as children. And they passed. They put away childish things.

"Clarissa—" he said.

Then he paused, standing mo-

tionless in silence, looking across that dark threshold into that mir-
rory dimness, seeing—what he saw.
It was dark on the landing. The
staircases went up and down, shad-
owy and still. There was stasis
here, and no movement anywhere
in the quiet air. This was power
beyond the need for expression of
power.

He turned and went slowly down
the stairs. The fear and pain and
gnawing uneasiness that had trou-
bled him for so long were gone
now. Outside, on the curb, he lit a
cigarette, hailed a taxi, and con-
sidered his next movements.

A cab swung in. Further along
the street, the liquid, shining black-
ness of the East River glissaded
smoothly down to the Sound. The
rumble of an El train came from
the other direction.

"Where to, sergeant?" the driver
asked.

"Downtown," Lessing said.
"Where's a good floorshow?" He
relaxed pleasantly on the cushions,
his mind quite free from strain or
worry now.

This time the memory block was
complete. He would go on living
out his cycle, complacent and happy
as any human ever is, enjoying
life to his capacity for enjoyment,
using the toys of earth with pro-
found satisfaction.

"Nightclub?" the driver said.
"The new Cabana's good—"

Lessing nodded. "O. K. The
Cabana." He leaned back, luxuri-
ously inhaling smoke. It was the
children's hour.

THE END.



HALF-CROUCHING, HIS FACE FRIGHTENED...

... a man came through a door into
the large hall in which they stood. His
face was frightened behind the shotgun
he was holding. He stared at Doc and
the others.

... He fired the shotgun ... Monk
swayed there, arms over his stomach,
face almost buried ...

Don't miss the thrilling Doc Savage novel,
THE WHISKER OF HERCULES, in the
great April issue of

DOC SAVAGE

AT ALL NEWSSTANDS

"C" Frozen at 186272

One of the most comforting features of the theory of relativity is its insistence that the velocity of light— c as it is always designated in physics—is a universal constant of nature. In a world that changes so rapidly we can scarcely keep track of it from the morning to the noon editions, there was always the reassuring thought that at least light keeps on moving at the same old speed. No matter how hectic things became, the length of that handiest of everyday units—the jiffy*—remained fixed at 0.000000000333333 seconds.

The only disquieting note was the one first sounded sixteen years ago by the French scientist, Gheury de Bray, and emitted by him with more or less regularity ever since, to the effect that beginning with Fizeau in 1849 the velocity of light has shown a steady decrease at the rate of 2.5 miles per second per year. According to the formula deduced by de Bray a time will eventually arrive around the year 78943 A.D. when light will come to a halt entirely. This awkward situation could be avoided, however, if the apparent decrease in c is regarded rather as an increase in the unit of length—the expansion of the universe, in other words. For if the universe doubles in size in T years then the

velocity of light must accordingly be halved every T years.

De Bray writing as late as 1936 believed that the so-called constancy of the velocity of light should from now on be regarded merely as an outmoded working hypothesis, which must make way for some new theory in better agreement with the facts of observation. Additional support for a variation in c is obtained from the Michelson-Pease-Pearson measurements in 1932—sometimes called the Amos and Andy determination from the fact work was always commenced immediately after this popular broadcast—which revealed sudden changes at intervals of a few hours, changes which have never received a satisfactory explanation.

De Bray's work together with measurements made up to 1940 have been discussed in detail in a report published by the Physical Society of London. It contains several results of extraordinary interest.

The first concerns the determination of c made by Michelson at Mount Wilson in 1927. This has come to be considered as one of the classical researches of modern physics. A brass plate set in one of the piers on Mount Wilson which Michelson used commemorates the event. Visitors often seek out the spot and gaze upon it with the same reverent awe that Dante must have beheld Beatrice.

* The "jiffy" being defined as the length of time required for light to travel one centimeter under any old kind of conditions.

It now appears that Michelson greatly overestimated the accuracy of his results. Thus the base line of twenty-two miles from Mount Wilson to Mount San Antonio was supposed to be known with an error of less than 1.38 inches. But in the case of the carefully measured mile-long pipe line used in 1932 there was a regular increase in length of one-quarter of an inch per year, and then an abrupt decrease of a third of an inch after a mild earthquake. Between the time Michelson's twenty-two-mile base line was measured and the actual work on the velocity of light began, the violent Santa Barbara earthquake occurred which could easily have made a difference of several feet! Furthermore, although Michelson's work was done under a wide variety of atmospheric temperatures and pressures, yet he made only a single correction to reduce his value of c from air to vacuum. For these and other reasons, the probable error of Michelson's 1927

results has been increased from 2.5 miles to 9.3 miles per second.

The Report considers that the only measurements of c sufficiently accurate to be really reliable are eight values obtained during the last twenty-seven years. The first of these made in 1906 by Rosa and Dorsey was by an indirect method in which c is found from the ratio between the electric charge in electrostatic units and in electromagnetic units. Comparatively little has been heard of this determination which the Report describes as "one of the most beautifully executed pieces of precision research in the entire history of science." The last measurement involving the new technique of the Kerr cell is also assigned a very low probable error.

In order to give de Bray's hypothesis of the decrease in c every possible advantage, however, five of the best earlier values extending back to 1875 are included. The total data are shown in the accompanying table.

<i>Author</i>	<i>Method</i>	<i>Date</i>	<i>Velocity</i>	<i>Probable Error</i>
Cornu-Helmert	TW	1874.8	186405 miles/sec.	124 miles/sec.
Michelson	RM	1879.5	186355	31
Newcomb	RM	1882.7	186324	19
Michelson	RM	1882.8	186320	37
Perrotin	TW	1902.4	186349	52
Rosa-Dorsey	EU	1906.0	186277	6
Mercier	WW	1923.0	186276	19
Michelson	RM	1926.5	186285	9
Mittelstaedt	KC	1928.0	186278	6
M. P. P.	RM	1932.5	186271	2
Anderson	KC	1936.8	186269	6
Huttel	KC	1937.0	186269	6
Anderson	KC	1940.0	186272	4

TW—toothed wheel; RM—rotating mirror; EU—electric units; WW—waves on wires; KC—Kerr cell; M. P. P.—Michelson, Pease, Pearson.

It should be emphasized that all values have been assigned certain *weights*—not given in the table—according to their accuracy which vary over a range of from 1 to 2500. Hence, in attempting to arrive at any result concerning the velocity of light the older values get much less consideration than the later ones.

The velocity of light given by the weighted average of the five older measures is 186332. The weighted average of the eight recent results is 186272. Thus there is an apparent drop in c of sixty miles per second at the opening of the present century. However, the Report hesitates to call this a genuine decrease. For when all thirteen values

are tested for a time variation by the method of least squares the rate of change comes out 0.6 miles per second which is too small to have any statistical meaning. And when only the last most accurate values are tested the time variation has no significance whatever.

Hence, according to the latest word from the experts the value of c , after a long and hectic history from Roemer's first determination of 187, 880 in 1675 down to the present day, at last seems to have settled down to the value now adopted as the very best obtainable from all measurements of

$c = 186,272$ miles per second.

R. S. RICHARDSON

Stellar Echo Ranging

After Nova Persei was discovered, observers noted an expanding glow surrounding it. As estimates of its distance had been made showing an enormous velocity of expansion, and reports of Doppler wave-length shift were lacking, Kapteyn proposed the theory that it was light from the nova illuminating previously invisible stars in its vicinity. The distance the light traveled from the time it became a nova was a base line of the triangle, the apex

angle was readily measured and the distance was then directly computable. It came out three hundred fifty light-years.

Nova Aquilae also showed an expanding glow, but in this case the rate of expansion was only two seconds of arc per year. The spectroscope showed a radial velocity of seventeen hundred kilometers per second. This figured out to make the distance twelve hundred light-years.

FRED NASH



Brass Tacks

We're very sorry about the trouble from that deciduous November issue. The problem is this: The glue, to stay tough and flexible, requires glycerine as a moisture-retaining agent. Glycerine, however, has certain other uses. And staples are made of steel wire. It isn't economy that induced us to forego the use of staples!

Dear Campbell:

Since readers lately have been getting away from the grand old habit of reviewing AST at the end of each year, I think I'll try to revive an old custom and give you my opinions on '43.

The covers on all were well up to average, while two or three were really outstanding. Timmins' cover for "The World Is Mine" merits place with some of the best covers you have ever given us—like that for "Crucible of Power", "Worlds Don't Care", "Nightfall", et cetera. Also, those for "Hunch" and "Altitude" were excellent. I hope that, after the war, when you get Rogers

back, you will give us a lot of Timmins along with Rogers.

Interior art work, in all but the November and December issues, has been fair, but not too good. I miss the large, sprawling pics of Rogers, and the sketch work by Schneeman. Lately, you seem to confine your illustrations to somewhere in the middle of a story, when there should always be an illustration at the beginning of the story, opposite the title. At least, I know I feel a little frustrated when I turn to the first page of a story and find nothing but the title in black type there, and two columns of wordage. It seems to me the book-jacket illustrations always used to be rather popular, too—how about reviving them?

"Opposites React" was one of the year's bests. I didn't read the first of this series when it first appeared, and I guess I still haven't, but I like Stewart's ideas immensely. "The Cave" in the same issue also came up to par.

"Mimsy Were the Borogoves" in February stood head-and-shoulders over everything else in the issue except the conclusion of "Opposites". Did you forget to award your *Nova* designation to that, editor, or didn't you consider it quite up to merit?

Cliff Simak's "Shadow of Life" naturally interested me quite a lot, since I, and many other of the Mpls Fantasy Society's members were around when Cliff read the plot to us. I liked "Shock" and "QUR", though, too—"Shock" especially. Padgett is one of your better authors, by the way.

I'm sorry about April—guess I missed that month, and May to boot. I remember reading, though, Ley's article on the *Tyranasaurus Rex*. I'm glad you've been giving us a lot of articles lately, and especially since the rotogravure process brings them out so clear with the fotos.

The June issue was a corker, to put it mildly. "The World is Mine" was excellent, and "Competition," "Pelagic Spark," and "Calling the Empress" were all three good, and, as mentioned before, the cover was really good. Reading this issue made AST seem a little more as it used to be—although, mind you, I like the trend AST has taken.

"Hunch," in July, took top honors by a long way. It stands along with some of Simak's best stuff. "The Great Engine" and Richardson's article stand out in my mind as being way up, too. The astronomical articles that Richardson turns out have a lot of good reading matter in them, for they are written

well, and contain a lot of practical facts.

"Judgment Night," "One-Way Trip," and "Endowment Policy" were all good. So also was Ley's article on the German Rocket Society. I'm particularly interested in rockets, and like to read these things Ley writes. Could you persuade him to do an article on Goddard's experiments here in the United States, and/or one on the rocket motors he designed for that trip that was to carry the stamps that a certain fancier wanted carried in a hitherto-unused manner? We've read a lot about foreign experiments, but not much that I can recall about American research—or was I only absent at the time?

"Altitude" was quite all right. The Vegans were a little unreal, it seemed, but I liked it quite a lot. Hal Clement is another good author you've developed, along with Padgett and a few others—mustn't forget to include George Smith in that list.

Sorry, I'd like to pass⁴ up October. "The Proud Robot" wasn't bad, and neither was "Symbiotica," but the issue wasn't the best issue representative of AST.

Despite the excellent rotogravure section, the small size can be thrown in the ash can for all of me. My November copy has come apart at the seams in about four places, and already there are about five loose pages. Couldn't you persuade your managing boss that staples aren't so all-fired expensive as to put at least one in each issue. I don't think anyone's going to like that contents

page you've got rigged up, either. It looks like something that came out of the days of 1925, and makes a glaring contrast with the ultra-modernism of the issues earlier in the year. Please take the spaceship cut off the title page, and use the same type you used to use, if in a smaller edition. And then, after that, change back to the same kind of lettering you've been using on the cover. All these changes you've been bringing about in the last few months are making us dizzy just trying to find the magazine. They're putting AST in with the pocketbooks now, and it probably took many of us a couple of minutes searching just to find it—even after we knew what we were looking for. To somebody just browsing around, AST won't be particularly noticeable.

And since you've got smaller pages now, how about some full-page illustrations once in a while. The little shriveled-up things you've been sticking in can barely be seen. Another suggestion might be to stick the page number, name of magazine, and name of story at the top of the page instead of at the bottom. One can barely see it the way it is, and it looks no better anyway.

Yours for better *Astoundings*!—
John L. Gergen, 221 Melbourne S. E., Minneapolis, 14, Minnesota.

An idea to try, perhaps?

My dear Mr. Campbell:

Please permit me to reach your readers with a different sort of let-

ter than those which usually are in your column. Some of us were fond of imaginative fiction long before Astounding Stories appeared. I remember the serials of H. G. Wells in the old *Cosmopolitan* and *Harpers' Weekly*. I recall the first exposition of the Röntgen Rays in the old *McClure's*. At six I was reading Olive Thorne Miller's "Real Fairy Folks." A much later graduation at a pioneer western technical school put me among those who feel that the pursuit of Knowledge for its own sake, rather than "extra curricular activities," was worth while.

Suppose that some of us could enter a school at eleven plus which would have adequate shops and labs and be based upon science rather than the now popular pseudo "social science." Suppose that the school in its later years had the facilities of MIT, Purdue, Georgia Tech, Rice, or California Tech. Might not there be a few more Conants, Millikens, and perhaps, even a Faraday or so, oftener than we get them from the present schools?

How many high schools are headed by principals of scientific training rather than the conventional A.B. or M.A.? How many of these really know and try to get what the science teacher should have to teach his subject adequately? I only had one such in twenty-five years. If we want astrogation and all that goes with it, we must begin further back in the school systems, while the minds are a bit more plastic and receptive to science than later. Math must come

to be something with which we navigate, build bridges and streamline planes and rockets and bullets, rather than forty-five minutes per day with some dear lady who has never gone beyond plane trig and who never will think like an engineer.

Such schools will cost real money. They will not be gold bricks, giving a veneer of training rather than education. One will have to fight boards and legislatures to get them. Many have been lulled into accepting a type of school which teaches trades and which, therefore, can get Federal aid. A real technical high school scarcely does this at present. That puts them out of question except in the cities.

Four years ago the English science teachers published the Spens Report, giving their ideas of this sort of school, and is summarized in Vol. 143 of *Nature*. There has been a conspiracy of silence concerning this report in the United States. But get it out and read it. How many schools in this country will measure up to the ideas set forth there? Unfortunately, Britain may be too poor after the war to build many such. Read the article and write the Editor. I only wish I could have attended such a school when I was eleven plus.

This country is cursed with educational Bourbonism. The "educators" learn nothing and they forget nothing. They are ready to go back to the old classical rut after this is over. They are ready for "greater things." And scientific progress and education is to be shoved

quietly back into a corner till another world conflict forces it to the fore. The arts college is to be preserved and our children are to learn at the knees of the younger teachers.

One of them conceded the other day that "the day will come when American society will recognize its even greater need for men and women who can recreate what has been destroyed, and who can lead in ways of peace as soldiers now lead in war." But it takes engineers and scientists to recreate as well as lawyers. The speaker forgot the constructive side of science—that explosives can help construction as well as penicillin. With such people, Science is always to be fettered like an ox, never free as Pegasus. Like the Princess in the Hindu epic, when Karna bends the Great Bow, they say, "I will not wed the base born."

If Faraday had gone to Sir Humphrey Davy's lab at eighteen rather than at twelve, he might have remained the respected lab man, the servant and bottle washer, but never the man who thrust the bar magnet into the coil of wire in series with the galvanometer. There may be too many such today, who get too late and too meager a contact with science, in the least expensive labs possible, a glimpse of chemistry and physics from some one who has majored in something else. No wonder they fail to respond to such retarded development.

If your readers will quietly begin to work for earlier and better science and math teaching, for Math

is the only Science which can be taught without a lab, we may get to the stars many generations, many cycles earlier. I am—R. E. Bowman, Box 357, Blacksburg, Virginia.

A co-ordinator settling a case every ten minutes, eight hours a day, five days a week, fifty-two weeks a year, could handle about thirteen thousand cases. Leaving no time to record deaths, marriages, births, contracts, or the other essential duties. Nor time to see that his decisions were enforced. And remember Leinster's not-so-fantastic bureaucracy-oligarchy of "Plague"?

Dear Sir:

Some time back I noted a request of yours for communications regarding a workable plan for galactic government.

I am sending you a brief resumé of my ideas concerning the setting up of a successful galactic government.

Galactic government will offer no insuperable difficulties, provided the following are observed.

(1) All senseless duplication such as exists in our present democratic government must be eliminated.

(2) Government must be a full time occupation, and not the spare time job it is now.

(3) Government must, of necessity, if the two previous statements are regarded as axiomatic, be an oligarchy rather than a democracy.

It's fundamental principle can no longer be "of the people, for the people, and by the people," but must needs be "the greatest good for the greatest number."

(4) Only by eliminating all duplication can any galactic government avoid a top-heavy percentage of government employees.

An Ohio county in which I spent nine years has, in a total population of eleven thousand, one hundred sixty-five people who possess legislative and administrative functions to varying degrees. That means one administrative person for each sixty-seven residents. Included are school boards, town councils, mayors and all county officials. Not included are school teachers, officers of the law, or clerical employees.

By abolishing all municipal governments, one hundred forty or more of these one hundred sixty-five could be eliminated. There is no reason why the citizen of Belmont needs a different set of laws than the citizen of Vaughnsville.

Carrying this a step further, the law that is just in one section of Ohio, should be equally just in the opposite corner of the state. Therefore, let us abolish all county government.

A just law should apply equally to all. Therefore by the time galactic or even a solar government becomes needed, all the people, not only of Ohio, but the United States, North America, the world, should have one Codex of fundamentals. This would eliminate a majority of the governmental employees.

(2) Government must be a full

time job. No longer can a man become a senator because he has been a good small-town banker, nor a president because he was a good newspaper editor.

A selected group must be trained from infancy to become government. They must undertake government as their life job, not a short time position to gain publicity.

In this manner the fool, the fraud, the charlatan, the pettifogger would all be relegated to oblivion. Only the person who would prepare by long years of training could ever be even a minor governmental worker.

(3) Government would of necessity become an oligarchy. We all know that a democracy is unwieldy, a republic even more so. The oligarchy would be one of volition, however, and not one of compulsion. By that I mean that ability to govern would be the sole consideration.

The lowest ranking member of this oligarchy, would be a co-ordinator selected as the need arose, by the people of the county, or whatever the basal unit might be. His responsibility would be to see that all things needed for the good of his community were done, the small tax paid, the arguments between neighbors settled.

He would be, as his title implies, "all things to all people," answerable to his superiors and his peers. His county would retain the right of impeachment, his superior the right to remove him from office for dereliction of duty.

He would be replaced by his

county upon his death, retirement from old age, promotion, or removal from office. Once each year he would lay the facts of his stewardship before the citizens of his group for their action.

As soon thereafter as possible, he and his fellow co-ordinators of the area would meet for a discussion of any mutual problems.

I have not attempted to carry on further than this, because once the above delineated principles are accepted, their extension becomes merely a matter of mechanics.

Obviously, by the time the need for a galactic government arises, the problems of communication and transportation will have been solved. Without travel speeds far exceeding that of light, there can be no galactic government. At the speed of light, any law would have become archaic long before it could be given to all the galaxy.

If you are interested, and feel that any good can come of enlarging on my theme, I will be glad to do so.

Otherwise—E. L. Cameron, 412 Virginia Avenue, Front Royal, Virginia.

The higher the evolution of the animal, the more perfectly it adapts itself to conditions. Do you think I.Q. 300 could not recognize this situation and camouflage itself beyond detection by I.Q. 150?

My dear Mr. Campbell:

Just came across your article in the September 1941 issue, "We're

not All Human." The points taken as to the existence of human mutations is surprisingly correct though the ante and post conclusions are often far off the track.

Amongst the higher mutants it is only a high mutant who can recognize others. The greater can encompass the lesser but the lesser can envision only something which is very slightly beyond his own capacity. So one has to be a very high type mutant to get a good grasp of the whole situation.

Your conclusion that the high mutant will be in the most important seats is erroneous. The average human is very much animal in the pack stage. Anything strange, and do they smell out higher mutants, is at once set upon with united front and put into its place amongst the punkest of the punks. As being abnormal, like the idiots and so an idiot. So a high mutant's life is not a happy one. In his own family he is a stranger, because he is "strange. The same in school where he masters subjects interesting to him with the greatest of ease but is also completely indifferent to subjects of questionable value. Besides, picture the effect on a teacher of a pupil who can give him cards and spades in his own particular subject and a beating in front of the class. So again his life is not a happy one."

Then later on, in business or pro-

fession or what have you in making a living he also is very much *de trop*. Since he is able to make instantaneous decisions by clear vision of all the factors involved without having to go through lengthy rigmaroles of research, his decisions can not be right. And if they were, he would make the whole bunch of his betters and superiors superfluous and obsolete. A state to be prevented by ANY means. Its only under conditions of catastrophe that a high mutant can take his rightful place, at the head of things. But once the catastrophe has simmered down, he is promptly eliminated. So again, et cetera.

So nix on the high rewards awaiting the high mutant with an I. Q. above three hundred. He is in these times of normalizing rejected and junked with utmost dispatch. His best chance is being kept as a spare to fit a possible odd situation. Being ranked with the dolts and the subnormal, where his "mistakes" are not important.

As to the transmission of these qualities, under favorable circumstances an ascending line may be continued for many generations. But such circumstances are extremely rare as humanity does not encourage extensive propagation of high mutants.—Frederick G. Hehr, 642 West 111th Street, Los Angeles 44, California.



Deadline

by CLEVE CARTMILL

There was a bomb that he wanted to destroy. It was in an enemy nation's capital, and might explode at any moment. And that was precisely what he must prevent!

Illustrated by Orban

Heavy flak burst above and below the flight of bombers as they flashed across the night sky of the planet Cathor. Ybor Sebrot grinned as he nosed his glider at a steep angle away from the fireworks. The bombers had accomplished their mission: they had

dropped him near Nilreq, had simulated a raid.

He had cut loose before searchlights slatted the sky with lean, white arms. They hadn't touched the glider, marked with their own insignia. Their own glider, in fact, captured when Seilla advance col-

umns had caught the Namo garrison asleep. He would leave it where he landed, and let Sixa intelligence try to figure out how it got there.

Provided, of course, that he landed unseen.

Sixa intelligence officers would have another job, too. That was to explain the apparent bombing raid that dropped no bombs. None of the Seilla planes had been hit, and the Sixa crowd couldn't know that the bombers were empty: no bombs, no crews, just speed.

He could see tomorrow's papers, hear tomorrow's newscasts. "Raiders driven off. Craven Democracy pilots cringe from Nilreq ack-ack." But the big bugs would worry. The Seilla planes *could* have dropped bombs, if they'd had any bombs. They had flitted across the great industrial city with impunity. They could have laid their eggs. The big bugs would wonder about that. Why? they would ask each other profoundly. What was the reason?

Ybor grinned. He was the reason. He'd make them wish there *had* been bombs instead of him. Possibility of failure never entered his mind. All he had to do was to penetrate into the stronghold of the enemy, find Dr. Sitruc, kill him, and destroy the most devastating weapon of history. That was all.

He caught a sharp breath as a farmhouse loomed some distance ahead, and veered over against the dark edge of a wood. The green-gray plane would be invisible against that background, unless

keen eyes caught its shadow under a fugitive moon.

He glided silently now, on a little wind that gossiped with tree-tops. Only the wind and the trees remarked on his passing. They could keep the secret.

He landed in a field of grain that whispered fierce protest as the glider wished through its heavy-laden plumes. These waved above the level of the motorless ship, and Ybor decided that it would not be seen before harvesting machines gathered the grain.

The air was another problem. He did not want the glider discovered just yet, particularly if he should be intercepted on his journey into the enemy capital. Elementary intelligence would connect him with this abandoned ship if he were stopped in this vicinity for any reason, and if the ship should be discovered on the morrow.

He took a long knife from its built-in sheath in the glider and laid about him with it until he had cut several armloads of grain. He scattered these haphazardly—not in any pattern—over parts of the ship. It wouldn't look like a glider now, even from the air.

He pushed through the shoulder-high growth to the edge of the wood.

He moved stealthily here. It was almost a certainty that big guns were hidden here, and he must avoid discovery. He slipped along the soft carpet of vegetation like a nocturnal cat, running on all fours under low branches, erect when possible.

A sharp scent of danger assailed his nostrils, and he crouched motionless while he sifted this odor. It made a picture in his head: men, and oil, and the acrid smoke of exploded gases. A gun crew was directly ahead.

Ybor took to the trees. He moved from one to the other, with no more sound than soft-winged night birds, and approached the source of the odor. He paused now and then, listening for a sentry's footsteps. He heard them presently, a soft *pad-pad* which mingled, in different rhythm, with snores which became audible on the light wind.

The better part of valor, Ybor knew, was to circle this place, to leave the sentry unaware of his passage through the wood. But habit was too strong. He must destroy, for they were the enemy.

He moved closer to the sound of footsteps. Presently, he crouched above the line of the sentry's march, searching the darkness with eye and ear. The guard passed below, and Ybor let him go. His ears strained through snores from nearby tents until he heard another guard. Two were on sentry duty.

He pulled the knife from his belt and waited. When the sentry shuffled below him, Ybor dropped soundlessly onto the man's shoulders, stabbing as he fell.

There was a little noise. Not much, but a little. Enough to bring a low-voiced hail from the other guard.

"Namreh?" called the guard. "What happened?"

Ybor grunted, took the dead man's gun and helmet and took over his beat. He marched with the same rhythm the enemy feet had maintained until he met the second guard. Ybor silenced questions with a swift slash of the knife, and then turned his attention to the tents.

Presently, it was done. He clamped the fingers of the first guard around the knife hilt and went away. Let them think that one of their men had gone mad and killed the others before suiciding. Let the psychologists get a little work-out on this.

When he had penetrated to the far edge of the wood, dawn had splashed pale color beyond Nilreq, pulling jumbled buildings into dark silhouette. There lay his area of operations. There, perhaps, lay his destiny, and the destiny of the whole race.

This latter thought was not born of rhetorical hyperbole. It was cold, hard fact. It had nothing to do with patriotism, nor was it concerned with politico-economic philosophy. It was concerned with a scientific fact only: if the weapon, which was somewhere in the enemy capital, were used, the entire race might very well perish down to the last man.

Now began the difficult part of Ybor's task. He started to step out of the wood. A slight sound from behind froze him for the fraction of a second while he identified it. Then, in one incredibly swift mo-

tion. he whirled and flung himself at its source.

He knew he was fighting a woman after the first instant of contact. He was startled to some small extent, but not enough to impair his efficiency. A chopping blow, and she lay unconscious at his feet. He stood over her with narrowed eyes, unable to see what she looked like in the leafy gloom.

Then dawn burst like a salvo in the east, and he saw that she was young. Not immature, by any means, but young. When a spear of sunlight stabbed into the shadow, he saw that she was lovely.

Ybor pulled out his combat knife. She was an enemy, and must be destroyed. He raised his arm for the *coup de grace*, and held it there. He could not drive the blade into her. She seemed only to sleep, in her unconsciousness, with parted ripe lips and limp hands. You could kill a man while he slept, but Nature had planted a deep aversion in your instincts to killing a helpless female.

She began to moan softly. Presently she opened her wide brown eyes, soft as a captive fawn's.

"You hit me." She whispered the accusation.

Ybor said nothing.

"You hit me," she repeated.

"What did you expect?" he asked harshly. "Candy and flowers? What are you doing here?"

"Following you," she answered. "May I get up?"

"Yes. Why were you following?"

"When I saw you land in our

field, I wondered why. I ran out to see you cover your ship and slip into the woods. I followed."

Ybor was incredulous. "You followed me through those woods?"

"I could have touched you," she said. "Any time."

"You lie!"

"Don't feel chagrined," she said. She flowed to her feet in a liquid movement. Her eyes were almost on a level with his. Her smile showed small, white teeth. "I'm very good at that sort of thing," she said. "Better than almost anybody, though I admit you're no slouch."

"Thanks," he said shortly. "All right, let's hear the story. Most likely it'll be the last you'll ever tell. What's your game?"

"You speak Ynamren like a native," the girl said.

Ybor's eyes glinted. "I am a native."

She smiled her disbelief. "And you kill your own soldiers? I think not. I saw you wipe out that gun crew. There was too much objectivity about you. One of us would do it with hatred. For you, it was a tactical maneuver."

"You're cutting your own throat," Ybor warned. "I can't let you go. You're too observing."

She repeated, "I think not." After a pause, she said, "You'll need help, whatever your mission. I can offer it."

He was contemptuous. "You offer my head a lion's mouth. I can hide it there? I need no help. Especially from anybody clumsy

enough to be caught. And I've caught you, my pretty."

She flushed. "You were about to storm a rampart. I saw it in your odd face as you stared toward Nilreq. I caught my breath with hope that you could. That's what you heard. If I'd thought you were my enemy, you'd have heard nothing. Except, maybe, the song of my knife blade as it reached your heart."

"What's odd about my face?" he demanded. "It'd pass in a crowd without notice."

"Women would notice it," she said. "It's lopsided."

He shrugged aside the personal issue. He took her throat in his hands. "I have to do this," he said. "It's highly important that nobody knows of my presence here. This is war. I can't afford to be humane."

She offered no resistance. Quietly, she looked up at him and asked, "Have you heard of Ylas?"

His fingers did not close on the soft flesh. "Who has not?"

"I am Ylas," she said.

"A trick."

"No trick. Let me show you." As his eyes narrowed, "No, I have no papers, of course. Listen. You know Mulb, Sworb, and Nomos? I got them away."

Ybor hesitated. She could be Ylas, but it would be a fantastic stroke of luck to run into the fabulous director of Ynamre's underground so soon. It was almost beyond belief. Yet, there was a chance she was telling the truth. He couldn't overlook that chance.

"Names," he said. "You could have heard them anywhere."

"Nomos has a new-moon scar on his wrist," she said. "Sworb is tall, almost as tall as you, and his shoulders droop slightly. He talks so fast you can hardly follow. Mulb is a dope. He gets by on his pontifical manner."

These, Ybor reflected, were crisp thumbnail sketches.

She pressed her advantage. "Would I have stood by while you killed that gun crew if I were a loyal member of the Sixa Alliance? Wouldn't I have cried a warning when you killed the first guard and took his helmet and gun?"

There was logic in this, Ybor thought.

"Wasn't it obvious to me," she went on, "that you were a Seilla agent from the moment that you landed in my grain field? I could have telephoned the authorities."

Ybor took his hands from her throat. "I want to see Dr. Sitruc," he said.

She frowned off toward Nilreq, at towers golden in morning sunlight. Ybor noted indifferently that she made a colorful picture with her face to the sun. A dark flower, opening toward the dawn. Not that it mattered. He had no time for her. He had little time for anything.

"That will take some doing," she said.

He turned away. "Then I'll do it myself. Time is short."

"Wait!" Her voice had a quality which caused him to turn. He

smiled sourly at the gun in her hand.

Self-contempt blackened Ybor's thoughts. He had had her helpless, but he had thought of her as a woman, not as an armed enemy. He hadn't searched her because of callow sentimentality. He had scaled the heights of stupidity, and now would plunge to his deserved end. Her gun was steady, and purpose shone darkly in her eyes.

"I'm a pushover for a fairy tale," she said. "I thought for a while that you really were a Seilla agent. How fiendishly clever you are, you and your council! I should have known when those planes went over. They went too fast."

Ybor said nothing. He was trying to absorb this.

"It was a smart idea," she went on in her acid, bitter voice. "They towed you over, and you landed in my field. A coincidence, when you come to think of it. I have been in that farmhouse only three days. Of all places, you pick it. Not by accident, not so. You and the other big minds on the Sixa council knew the planes would bring me to my window, knew my eyes would catch the shadow of your glider, knew I'd investigate. You even killed six of your own men, to dull my suspicions. Oh, I was taken in for a while."

"You talk like a crazy woman," Ybor said. "Put away that gun."

"When you had a chance to kill me and didn't," she said, "my last suspicion died. The more fool I. No, my bucko, you are not going

back to report my whereabouts, to have your goons wait until my committee meets and catch us all. Not so. You die here and now."

Thoughts raced through Ybor's head. It would be a waste of energy to appeal to her on the ground that if she killed him she would in effect destroy her species. That smacked of oratory. He needed a simple appeal, crisp and startling. But what? His time was running short; he could see it in her dark eyes.

"Your last address," he said, remembering Sworb's tale of escape, "was 40 Curk Way. You sold pastries, and Sworb got sick on little cakes. He was sick in your truck, as it carted him away at eleven minutes past midnight."

Bull's eye. Determination to kill went out of her eyes as she remembered. She was thoughtful for a moment.

Then her eyes glinted. "I've not heard that he reached Acireb safely. You could have caught him across the Enarta border and beaten the truth out of him. Still," she reflected, "you may be telling the truth . . ."

"I am," Ybor said quietly. "I am a Seilla agent, here on a highly important mission. If you can't aid me directly, you must let me go. At once."

"You might be lying, too, though. I can't take the chance. You will march ahead of me around the wood. If you make one overt move, or even a move that I don't understand, I'll kill you."

"Where are you taking me?"



"To my house. Where else? Then we'll talk."

"Now listen to me," he said passionately, "there is no time for—"

"March!"

He marched.

Ybor's plan to take her unawares when they were inside the farmhouse dissolved when he saw the great hulk who admitted them. This was a lumpish brute with the most powerful body Ybor had ever seen, towering over his own more than average height. The man's arms were as thick as Ybor's thighs, and the yellow eyes were small and vicious. Yet, apelike though he was, the giant moved like a mountain cat, without sound, with deceptive swiftness.

"Guard him," the girl commanded, and Ybor knew the yellow eyes would not leave him.

He sank into a chair, an old chair with a primitive tail slot, and watched the girl as she busied herself at the mountainous cooking range. This kitchen could accommodate a score of farmhands, and that multiple-burner stove could turn out hot meals for all.

"We'd better eat," she said. "If you're not lying, you'll need strength. If you are, you can withstand torture long enough to tell us the truth."

"You're making a mistake," Ybor began hotly, but stopped when the guard made a menacing gesture.

She had a meal on the table soon. It was a good meal, and he ate it heartily. "The condemned man," he said, and smiled.

For a camaraderie had sprung up between them. He was male, not too long past his youth, with clear, dark eyes, and he was put together with an eye to efficiency; and she was female, at the ripening

stage. The homely task of preparing a meal, of sharing it, lessened the tension between them. She gave him a fleeting, occasional smile as he tore into his food.

"You're a good cook," he said, when they had finished.

Warmth went out of her. She eyed him steadily. "Now," she said crisply. "Proof."

Ybor shrugged angrily. "Do you think I carry papers identifying me as a Seilla agent? 'To whom it may concern, bearer is high in Seilla councils. Any aid you may give him will be appreciated.' I have papers showing that I'm a newspaper man from Eeras. The newspaper offices and building have been destroyed by now, and there is no means of checking."

She thought this over. "I'm going to give you a chance," she said. "If you're a top-flight Seilla agent, one of your Nilreq men can identify you. Name one, and we'll get him here."

"None of them know me by sight. My face was altered before I came on this assignment, so that nobody could give me away, even accidentally."

"You know all the answers, don't you?" she scoffed. "Well, we will now take you into the cellar and get the truth from you. And you won't die until we do. We'll keep you alive, one way or another."

"Wait a moment," Ybor said. "There is one man who will know me. He may not have arrived. Solraq."

"He came yesterday," she said. "Very well. If he identifies you,

that will be good enough. Sleyg," she said to the huge guard, "fetch Solraq."

Sleyg rumbled deep in his throat, and she made an impatient gesture. "I can take care of myself. Go!" She reached inside her blouse, took her gun from its shoulder holster and pointed it across the table at Ybor. "You will sit still."

Sleyg went out. Ybor heard a car start, and the sound of its motor faded rapidly.

"May I smoke?" Ybor asked.

"Certainly." With her free hand she tossed a pack of cigarettes across the table. He lighted one, careful to keep his hands in sight, handed it to her, and applied flame to his own. "So you're Ylas," he said conversationally.

She didn't bother to reply.

"You've done a good job," he went on. "Right under their noses. You must have had some close calls."

She smiled tolerantly. "Don't be devious, chum. On the off chance that you might escape, I'll give you no data to use later."

"There won't be any later if I don't get out of here. For you, or anybody."

"Now you're melodramatic. There'll always be a later, as long as there's time."

"Time exists only in consciousness," he said. "There won't be any time, unless dust and rocks are aware of it."

"That's quite a picture of destruction you paint."

"It will be quite a destruction.

And you're bringing it nearer every minute. You're cutting down the time margin in which it can be averted."

She grinned. "Ain't I nasty?"

"Even if you let me go this moment—" he began.

"Which I won't."

"—the catastrophe might not be averted. Our minds can't conceive the unimaginable violence which might very well destroy all animate life. It's a queer picture," he mused, "even to think about. Imagine space travelers of the future sighting this planet empty of life, overgrown with jungles. It wouldn't even have a name. Oh, they'd find the name. All traces of civilization wouldn't be completely destroyed. They'd poke in the crumbled ruins and find bits of history. Then they'd go back to their home planet with the mystery of Cathor. Why did all life disappear from Cathor? They'd find skeletons enough to show our size and shape, and they'd decipher such records as were found. But nowhere would they find even a hint of the reason our civilization was destroyed. Nowhere would they find the name of Ylas, the reason."

She merely grinned.

"That's how serious it is," Ybor concluded. "Not a bird in the sky, not a pig in a sty. Perhaps no insects, even. I wonder," he said thoughtfully, "if such explosions destroyed life in other planets in our system. Lara, for example. It *had* life, once. Did civilization rise to a peak there, and end in a war that involved every single per-

son on one side or another? Did one side, in desperation, try to use an explosive available to both but uncontrollable, and so lose the world?"

"*Shh!*" she commanded. She was stiff, listening.

He heard it then, the rhythmic tramp of feet. He flicked a glance through the window toward the wood. "Ynamre," he said.

A sergeant marched a squad of eight soldiers across the field toward the house. Ybor turned to the girl.

"You've got to hide me! Quick!"

She stared at him coldly. "I have no place."

"You must have. You must take care of refugees. Where is it?"

"Maybe you've caught me," she said grimly, "but you'll learn nothing. The Underground will carry on."

"You little fool! I'm with you."

"That's what you say. I haven't any proof."

Ybor wasted no more time. The squad was almost at the door. He leaped over against the wall and squatted there. He pulled his coat half off, shook black hair over his eyes, and slacked his face so that it took on the loose, formless expression of an idiot. He began to play with his fingers, and gurgled.

A pounding rifle butt took the girl to the door. Ybor did not look up. He twisted his fingers and gurgled at them.

"Did you hear anything last night?" the sergeant demanded.

"Anything?" she echoed. "Some planes, some guns."

"Did you get up? Did you look out?"

"I was afraid," she answered meekly.

He spat contemptuously. There was a short silence, disturbed only by Ybor's gurgling.

"Who's that?" the sergeant snapped. He stamped across the room, jerked Ybor's head up by the lock of hair. Ybor gave him an insane, slobbering grin. The sergeant's eyes were contemptuous. "Dummy!" he snarled. He jerked his hand away. "Why don't you kill it?" he asked the girl. "All the more food for you. Sa-a-a-y," he said, as if he'd seen her for the first time, "not bad, not bad. I'll be up to see you, cookie, one of these nights."

Ybor didn't move until they were out of hearing. He got to his feet then, and looked grimly at Ylas. "I could have been in Nilreq by now. You'll have to get me away. They've discovered that gun crew, and will be on the lookout."

She had the gun in her hand again. She motioned him toward the chair. "Shall we sit down?"

"After that? You're still suspicious? You're a fool."

"Ah? I think not. That could have been a part of the trick, to lull my suspicions. Sit—down!"

He sat. He was through with talking. He thought of the soldiers' visit. That sergeant probably wouldn't recognize him if they should encounter each other. Still, it was something to keep in mind.

One more face to remember, to dodge.

If only that big ape would get back with Solraq. His ears, as if on cue, caught the sound of an approaching motor. He was gratified to see that he heard it a full second before Ylas. Her reflexes weren't so fast, after all.

It was Sleyg, and Sleyg alone. He came into the house on his soft, cat feet. "Solraq," he reported, "is dead. Killed last night."

Ylas gave Ybor a smile. There was deadliness in it.

"How very convenient," she said, "for you. Doesn't it seem odd even to you, Mr. Sixa Intelligence Officer, that of all the Seilla agents you pick a man who is dead? I think this has gone far enough. Into the cellar with him, Sleyg. We'll get the truth this time. Even," she added to Ybor, "though it'll kill you."

This chair was made like a strait jacket, with an arrangement of clamps and straps that held him completely motionless. He could move nothing but his eyeballs.

Ylas inspected him. She nodded satisfaction. "Go heat your irons," she said to Sleyg. "First," she explained to Ybor, "we'll burn off your ears, a little at a time. If that doesn't wear you down, we'll get serious."

Ybor said, "I'll tell you the truth now."

She sneered at that. "No wonder the enemy is knocking at your gates. You were driven out of Aissu on the south, and Ytal on the

north. Now you are coming into your home country, because you're cowards."

"I'm convinced that you are Ylas," Ybor went on calmly. "And though my orders were that nobody should know of my mission, I think I can tell you. I must. I have no choice. Then listen. I was sent to Ynamre to—"

She cut him off with a fierce gesture. "The truth!"

"Do you want to hear this or not?"

"I don't want to hear another fairy tale."

"You are going to hear this, whether you like it or not. And you'll hold off your gorilla until I've finished. Or have the end of the race on your head."

Her lip curled. "Go on."

"Have you heard of U-235? It's an isotope of uranium."

"Who hasn't?"

"All right. I'm stating fact, not theory. U-235 has been separated in quantity easily sufficient for preliminary atomic-power research, and the like. They got it out of uranium ores by new atomic isotope separation methods; they now have quantities measured in pounds. By 'they', I mean Scilla research scientists. But they have *not* brought the whole amount together, or any major portion of it. Because they are not at all sure that, once started, it would stop before all of it had been consumed—in something like one micromicrosecond of time."

Sleyg came into the cellar. In one hand he carried a portable

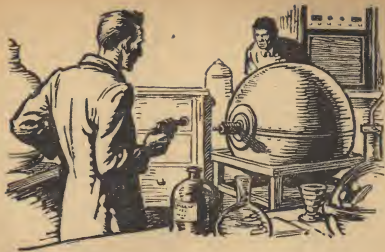
forge. In the other, a bundle of metal rods. Ylas motioned him to put them down in a corner. "Go up and keep watch," she ordered. "I'll call you."

A tiny exultation flickered in Ybor. He had won a concession. "Now the explosion of a pound of U-235," he said, "wouldn't be too unbearably violent, though it releases as much energy as a hundred million pounds of TNT. Set off on an island, it might lay waste the whole island, uprooting trees, killing all animal life, but even that fifty thousand tons of TNT wouldn't seriously disturb the really unimaginable tonnage which even a small island represents."

"I assume," she broke in, "that you're going to make a point? You're not just giving me a lecture on high explosives?"

"Wait. The trouble is, they're afraid that that explosion of energy would be so incomparably violent, its sheer, minute concentration of unbearable energy so great, that surrounding matter would be set off. If you could imagine concentrating half a billion of the most violent lightning strokes you ever saw, compressing all their fury into a space less than half the size of a pack of cigarettes—you'd get some idea of the concentrated essence of hyperviolence that explosion would represent. It's not simply the *amount* of energy; it's the frightful concentration of intensity in a minute volume.

"The surrounding matter, unable to maintain a self-supporting



atomic explosion normally, might be hyper-stimulated to atomic explosion under U-235's forces and, in the immediate neighborhood, release its energy, too. That is, the explosion would not involve only one pound of U-235, but also five or fifty or five thousand tons of other matter. The extent of the explosion is a matter of conjecture."

"Get to the point," she said impatiently.

"Wait. Let me give you the main picture. Such an explosion *would* be serious. It would blow an island, or a hunk of continent, right off the planet. It would shake Cathor from pole to pole, cause earthquakes violent enough to do serious damage on the other side of the planet, and utterly destroy everything within at least one thousand miles of the site of the

explosion. And I mean everything.

"So they haven't experimented. They could end the war overnight with controlled U-235 bombs. They could end this cycle of civilization with one or two *uncontrolled* bombs. And they don't know which they'd have if they made 'em. So far, they haven't worked out any way to control the explosion of U-235."

"If you're stalling for time," Ylas said, "it won't do you any good, personally. If we have callers, I'll shoot you where you sit."

"Stalling?" Ybor cried. "I'm trying my damndest to shorten it. I'm not finished yet. Please don't interrupt. I want to give you the rest of the picture. As you pointed out the Sixa armies are being pushed back to their original starting point: Ynamre. They started out to conquer the world,

and they came close, at one time. But now they are about to lose it. We, the Seilla, would not dare to set off an experimental atomic bomb. This war is a phase, to us; to the Sixa, it is the whole future. So the Sixa are desperate, and Dr. Sitruc has made a bomb with not one, but *sixteen* pounds of U-235 in it. He may have it finished any day. I must find him and destroy that bomb. If it's used, we are lost either way. Lost the war, if the experiment is a success; the world, if not. You, and you alone stand between extinction of the race and continuance."

She seemed to pounce. "You're lying! Destroy it, you say. How? Take it out in a vacant lot and explode it? In a desert? On a high mountain? You wouldn't dare even to drop it in the ocean, for fear it might explode. Once you had it, you'd have ten million tigers by the tail—you wouldn't dare turn loose."

"I can destroy it. Our scientists told me how."

"Let that pass for the moment," she said. "You have several points to explain. First, it seems odd that you heard of this, and we haven't. We're much closer to developments than you, across three thousand miles of water."

"Sworb," Ybor said, "is a good man, even if he can't eat sweets. He brought back a drawing of it. Listen, Ylas, time is precious! If Dr. Sitruc finishes that bomb before I find him, it may be taken any time and dropped near our headquarters. And even if it

doesn't set off the explosion I've described—though it's almost certain that it would—it would wipe out our southern army and equipment, and we'd lose overnight."

"Two more points need explaining," she went on calmly. "Why my grain field? There were others to choose from."

"That was pure accident."

"Perhaps. But isn't that string of accidents suspiciously long when you consider the death of Solraq?"

"I don't know anything about that. I didn't know he was dead."

She was silent. She strode back and forth across the cellar, brows furrowed, smoking nervously. Ybor sat quietly. It was all he could do; even his fingers were in stalls.

"I'm half inclined to believe you," she said finally, "but look at my position. We have a powerful organization here. We've risked our lives, and many of us have died, in building it up. I know how we are hated and feared by the authorities. If you are a Sixa agent, and I concluded that you were by the way you spoke the language, you would go to any length, even to carrying out such an elaborate plot as this might be, to discover our methods and membership. I can't risk all that labor and life on nothing but your word."

"Look at my position," Ybor countered. "I might have escaped from you, in the wood and here, after Sleyg left us. But I didn't dare take the chance. You see, it's a matter of time. There is a definite, though unknown, deadline. Dr. Sitruc may finish that bomb

any time, and screw the fuse in. The bomb may be taken at any time after that and exploded. If I had tried to escape, and you had shot me—and I'm sure you would—it would take weeks to replace me. We may have only hours to work with."

She was no longer calm and aloof. Her eyes had a tortured look, and her hands clenched as if she were squeezing words from her heart: "I can't afford to take the chance."

"You can't afford not to," Ybor said.

Footsteps suddenly pounded overhead. Ylas went rigid, flung a narrowed glance of speculation and suspicion at Ybor, and went out of the cellar. He twisted a smile; she hadn't shot him, as she had threatened.

He sat still, but each nerve was taut, quivering, and raw. What now? Who had arrived? What could it mean for him? Who belonged to that babble upstairs? Whose feet were heavy? He was soon to know, for the footsteps moved to the cellar door, and Ylas preceded the sergeant who had arrived earlier.

"I've got orders to search every place in this vicinity," the sergeant said, "so shut up."

His eyes widened when they fell on Ybor. "Well, well!" he cried. "If it isn't the dummy. Sa-a-ay, you snapped out of it!"

Ybor caught his breath as an idea hit him.

"I was drugged," Ybor said,

leaping at the chance for escape. "It's worn off now."

Ylas frowned, searching, he could see, for the meaning in his words. He went on, giving her her cue: "This girl's servant, that big oaf upstairs—"

"He ran out," the sergeant said. "We'll catch him."

"I see. He attacked me last night in the grain field out there, brought me here and drugged me."

"What were you doing in the grain field?"

"I was on my way to see Dr. Sitruc. I have information of the most vital nature for him."

The sergeant turned to Ylas. "What d'ya say, girlie?"

She shrugged. "A stranger, in the middle of the night, what would you have done?"

"Then why didn't you say something about it when I was here a while ago?"

"If he turned out to be a spy, I wanted the credit for capturing him."

"You civilians," the sergeant said in disgust. "Well, maybe this is the guy we're lookin' for. Why did you kill that gun crew?" he snarled at Ybor.

Ybor blinked. "How did you know? I killed them because they were enemies."

The sergeant made a gesture toward his gun. His face grew stormy. "Why, you dirty spy—"

"Wait a minute!" Ybor said. "What gun crew? You mean the Seilla outpost, of course, in Aissu?"

"I mean our gun crew, you rat, in the woods out there."

Ybor blinked again. "I don't know anything about a gun crew out there. "Listen, you've got to take me to Dr. Sitruc at once. Here's the background. I have been in Seilla territory, and I learned something that Dr. Sitruc must know. The outcome of the war depends on it. Take me to him at once, or you'll suffer for it."

The sergeant cogitated. "There's something funny here," he said. "Why have you got him all tied up?"

"For questioning," Ylas answered.

Ybor could see that she had decided to play it his way, but she wasn't convinced. The truth was, as he had pointed out, she could not afford to do otherwise.

The sergeant went into an analytical state which seemed to be almost cataleptic. Presently he shook his massive head. "I can't quite put my finger on it," he said in a puzzled tone. "Every time I get close, I hit a blank . . . what am I saying?" He became crisp, menacing. "What's your name, you?" he spat at Ybor.

Ybor couldn't shrug. He raised his eyebrows. "My papers will say that I am Yenraq Ekor, a newspaper man. Don't let them fool you. I'll give my real name to Dr. Sitruc. He knows it well. You're wasting time, man!" he burst out. "Take me to him at once. You're worse than this stupid female!"

The sergeant turned to Ylas. "Did he tell you why he wanted to see Dr. Sitruc?"

She shrugged again, still with

speculative eyes on Ybor. "He just said he had to."

"Well, then," the sergeant demanded of Ybor, "why *do* you want to see him?"

Ybor decided to gamble. This goof might keep him here all day with aimless questioning. He told the story of the bomb, much as he had told it to Ylas. He watched the sergeant's face, and saw that his remarks were completely unintelligible. Good! The soldier, like so many people, knew nothing of U-235. Ybor went into the imaginative and gibberish phase of his talk.

"And so, if it's uncontrolled," he said, "it might destroy the planet, blow it instantly into dust. But what I learned was a method of control, and the Seilla have a bomb almost completed. They'll use it to destroy Ynamre. But if we can use ours first, we'll destroy them. You see, it's a neutron shield that I discovered while I was a spy in the Seilla camps. It will stop the neutrons, released by the explosion, from rocketing about space and splitting mountains. Did you know that one free neutron can crack this planet in half? This shield will confine them to a limited area, and the war is ours. So hurry! Our time may be measured in minutes!"

The sergeant took it all in. He didn't dare not believe, for the picture of destruction which Ybor painted was on such a vast scale that sixteen generations of men like the sergeant would be required to comprehend it.

The sergeant made up his mind.

"Hey!" he yelled toward the cellar door, and three soldiers came in. "Get him out of that. We'll take him to the captain. Take the girl along, too. Maybe the captain will want to ask her some questions."

"But I haven't done anything," Ylas protested.

"Then you got nothing to be afraid of, beautiful. If they let you go, I'll take personal charge of you."

The sergeant had a wonderful leer.

You might as well be fatalistic, Ybor thought as he waited in Dr. Sitruc's anteroom. Certain death could easily await him here, but even so, it was worth the gamble. If he were to be a pawn in a greater game, the greatest game, in fact, so be it.

So far, he had succeeded. And it came to him as he eyed his two guards that final success would result in his own death. He couldn't hope to destroy that bomb and get out of this fortress alive. Those guarded exits spelled finis, if he could even get far enough from this laboratory to reach one of them.

He hadn't really expected to get out alive, he reflected. It was a suicide mission from the start. That knowledge, he knew now, had given plausibility to his otherwise thin story. The captain, even as the sergeant, had not dared to disbelieve his tale. He had imparted verisimilitude to his story of destruction because of his deep and flaming determination to prevent it.

Not that he had talked wildly

about neutron shields to the captain. The captain was intelligent, compared to his sergeant. And so Ybor had talked matter-of-factly about heat control, and had made it convincing enough to be brought here by guards who grew more timid with each turn of the lorry's wheels.

Apparently, the story of the bomb was known here at the government experimental laboratories; for all the guards had a haunted look, as if they knew that they would never hear the explosion if something went wrong. All the better, then. If he could take advantage of that fact, somehow, as he had taken advantage of events to date, he might—might—

He shrugged away speculation.

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The guards had sprung to attention as the inner door opened, and a man eyed Ybor.

This was a slender man with snapping dark eyes, an odd-shaped face, and a commanding air. He wore a smock, and from its sleeves extended competent-looking hands.

"So you are the end result," he said dryly to Ybor. "Come in."

Ybor followed him into the laboratory. Dr. Sitruc waved him to a straight, uncomfortable chair, using the gun which was suddenly in his hand as an indicator. Ybor sat, and looked steadily at the other.

"What do you mean, end result?" he asked.

"Isn't it rather obvious?" the doctor asked pleasantly. "Those planes which passed over last night were empty; they went too fast, otherwise. I have been speculating all day on their purpose. Now I see. They dropped you."

"I heard something about planes," Ybor said, "but I didn't see 'em."

Dr. Sitruc raised polite eyebrows. "I'm afraid I do not believe you. My interpretation of events is this: those Seilla planes had one objective, to land an agent here who was commissioned to destroy the uranium bomb. I have known for some time that the Seilla command have known of its existence, and I have wondered what steps they would take to destroy it."

Ybor could see no point in remaining on the defensive. "They are making their own bomb," he said. "But they have a control.

I'm here to tell you about it, so that you can use it on our bomb. We have time."

Dr. Sitruc said: "I have heard the reports on you this morning. You made some wild and meaningless statements. My personal opinion is that you are a layman, with only scant knowledge of the subject on which you have been so glib. I propose to find out—before I kill you. Oh, yes," he said, smiling, "you will die in any case. In my present position, knowledge is power. If I find that you actually have knowledge which I do not, I propose that I alone will retain it. You see my point?"

"You're like a god here. That's clear enough from the attitude of the guards."

"Exactly. I have control of the greatest explosive force in world history, and my whims are obeyed as iron commands. If I choose, I may give orders to the High Command. They have no choice but to obey. Now, you—your name doesn't matter; it's assumed, no doubt—tell me what you know."

"Why should I? If I'm going to die, anyway, my attitude is to hell with you. I do know something that you don't, and you haven't time to get it from anybody but me. By the time one of your spies could work his way up high enough to learn what I did, the Sixa would be defeated. But I see no reason to give you the information. I'll sell it to you—for my life."

Ybor looked around the small, shining laboratory while he spoke,

and he saw it. It wasn't particularly large; its size did not account for the stab of terror that struck his heart. It was the fact that the bomb was finished. It was suspended in a shock-proof cradle. Even a bombing raid would not shake it loose. It would be exploded when and where the doctor chose.

"You may well turn white as a sheet," Dr. Sitruc chuckled. "There it is, the most destructive weapon the world has ever known."

Ybor swallowed convulsively. Yes, there it was. Literally the means to an end—the end of the world. He thought wryly that those religionists who still contended that this war would be ended miraculously by divine intervention would never live to call the bomb a miracle. What a shot in the doctrine the explosion would give them if only they could come through it unscathed!

"I turned white," he answered Dr. Sitruc, "because I see it as a blind, uncontrolled force. I see it as the end of a cycle, when all life dies. It will be millennia before another civilization can reach our present stage."

"It is true that the element of chance is involved. If the bomb sets off surrounding matter for any considerable radius, it is quite possible that all animate life will be destroyed in the twinkling of an eye. However, if it does not set off surrounding matter, we shall have won the world. I alone—and now you—know this. The High Command sees only victory

in that weapon. But enough of chitchat. You would bargain your life for information on how to control the explosion. If you convince me that you have such knowledge, I'll set you free. What is it?"

"That throws us into a deadlock," Ybor objected. "I won't tell you until I'm free, and you won't free me until I tell."

Dr. Sitruc pursed thin lips. "True," he said. "Well, then, how's this? I shall give the guards outside a note, ordering that you be allowed to leave unmolested after you come through the laboratory door."

"And what's to prevent your killing me in here, once I have told you?"

"I give you my word."

"It isn't enough."

"What other choice have you?"

Ybor thought this over, and conceded the point. Somewhere along the line, either he or Dr. Sitruc would have to trust the other. Since this was the doctor's domain, and since he held Ybor prisoner, it was easy to see who would take the other on trust. Well, it would give him a breathing spell. Time was what he wanted now.

"Write the note," he said.

Dr. Sitruc went to his desk and began to write. He shot glances at Ybor which excluded the possibility of successful attack. Even the quickest spring would be fatal, for the doctor was far enough away to have time to raise his gun and fire. Ybor had a hunch that Dr. Sitruc was an excellent shot. He waited.

Dr. Sitruc summoned a guard,

gave him the note, and directed that Ybor be allowed to read it. Ybor did, nodded. The guard went out.

"Now," Dr. Sitruc began, but broke off to answer his telephone. He listened, nodded, shot a slitted glance at Ybor, and hung up. "Would it interest you to know," he asked, "that the girl who captured you was taken away from guards by members of the Underground?"

"Not particularly," Ybor said. "Except that . . . yes," he cried, "it does interest me. It proves my authenticity. You know how widespread the Underground is, how powerful. It's clear what happened; they knew I was coming, knew my route, and caught me. They were going to torture me in their cellar. I told that sergeant the truth. Now they will try to steal the bomb. If they had it, they could dictate terms."

It sounded a trifle illogical, maybe, but Ybor put all of the earnestness he could into his voice. Dr. Sitruc looked thoughtful.

"Let them try. Now, let's have it."

The tangled web of lies he had woven had caught him now. He knew of no method to control the bomb. Dr. Sitruc was not aware of this fact, and would not shoot until he was. Ybor must stall, and watch for an opportunity to do what he must do. He had gained a point: if he got through that door, he would be free. He must, then, get through the door—with the

bomb. And Dr. Sitruc's gun was in his hand.

"Let's trace the reaction," Ybor began.

"The control!" Dr. Sitruc snapped.

Ybor's face hardened. "Don't get tough. My life depends on this. I've got to convince you that I know what I'm talking about, and I can do that by describing the method from the first. If you interrupt, then to hell with you."

Dr. Sitruc's odd face flamed with anger. This subsided after a moment, and he nodded. "Go on."

"Oxygen and nitrogen do not burn—if they did, the first fire would have blown this planet's atmosphere off in one stupendous explosion. Oxygen and nitrogen *will* burn if heated to about three thousand degrees Centigrade, and they'll give off energy in the process. But they don't give off sufficient energy to maintain that temperature—so they rapidly cool, and the fire goes out. If you maintain that temperature artificially—well, you're no doubt familiar with that process of obtaining nitric oxide."

"No doubt," Dr. Sitruc said acidly.

"All right. Now U-235 can raise the temperature of local matter to where it will, uh, 'burn', and give off energy. So let's say we set off a little pinch of U-235. Surrounding matter also explodes, as it is raised to an almost inconceivable temperature. It cools rapidly; within perhaps one-hundred-millionth of a second, it is down below the point of ignition. Then maybe



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Well, what are you waiting for? Go ahead, write the letter to Joe. Try to write it, anyhow.

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a full millionth of a second passes before it's down to one million degrees hot, and a minute or so may elapse before it is visible in the normal sense. Now that visible radiation will represent no more than one-hundred-thousandth of the total radiation at one million degrees—but even so, it would be several hundred times more brilliant than the sun. Right?"

Dr. Sitruc nodded. Ybor thought there was a touch of deference in his nod.

"That's pretty much the temperature cycle of a U-235 plus surrounding matter explosion, Dr. Sitruc. I'm oversimplifying, I guess, but we don't need to go into detail. Now that radiation *pressure* is the stuff that's potent. The sheer momentum, physical pressure of light from the stuff at one million degrees, would amount to tons and tons and *tons* of pressure. It would blow down buildings like a titanic wind if it weren't for the fact that absorption of such appalling energy would volatilize the buildings before they could move out of the way. Right?"

Dr. Sitruc nodded again. He almost smiled.

"All right," Ybor went on. He now entered the phase of this contest where he was guessing, and he'd get no second guess. "What we need is a damper, something to hold the temperature of surrounding matter down. In that way, we can limit the effect of the explosion to desired areas, and prevent it from destroying cities on the opposite side of Cathor. The method of ap-

plying the damper depends on the exact mechanical structure of the bomb itself."

Ybor got to his feet easily, and walked across the laboratory to the cradle which held the bomb. He didn't even glance at Dr. Sitruc; he didn't dare. Would he be allowed to reach the bomb? Would an unheard, unfelt bullet reach his brain before he took another step?

When he was halfway across the room, he felt as if he had already walked a thousand miles. Each step seemed to be slow motion, leagues in length. And still the bomb was miles away. He held his steady pace, fighting with every atom of will his desire to sprint to his goal, snatch it and flee.

He stopped before the bomb, looked down at it. He nodded, ponderously. "I see," he said, remembering Sworb's drawings and the careful explanations he had received. "Two cast-iron hemispheres, clamped over the orange segments of cadmium alloy. And the fuse—I see it is in—a tiny can of cadmium alloy containing a speck of radium in a beryllium holder and a small explosive powerful enough to shatter the cadmium walls. Then—correct me if I'm wrong, will you?—the powdered uranium oxide runs together in the central cavity. The radium shoots neutrons into this mass—and the U-235 takes over from there. Right?"

Dr. Sitruc had come up behind Ybor, stood at his shoulder. "Just how do you know so much about that bomb?" he asked with over-

tones of suspicion.

Ybor threw a careless smile over his shoulder. "It's obvious, isn't it? Cadmium stops neutrons, and it's cheap and effective. So you separate the radium and U-235 by thin cadmium walls, brittle so the light explosion will shatter them, yet strong enough to be handled with reasonable care."

The doctor chuckled, "Why, you *are* telling the truth."

Dr. Sitruc relaxed, and Ybor moved. He whipped his short, prehensile tail around the barrel of Dr. Sitruc's gun, yanked the weapon down at the same time his fist cracked the scientist's chin. His free hand wrenched the gun out of Dr. Sitruc's hand.

He didn't give the doctor a

chance to fall from the blow of his fist. He chopped down with the gun butt and Dr. Sitruc was instantly unconscious. Ybor stared down at the sprawled figure with narrowed eyes. Dared he risk a shot? No, for the guards would not let him go, despite the doctor's note, without investigation. Well—

He chopped the gun butt down again. Dr. Sitruc would be no menace for some time, anyway. And all Ybor needed was a little time. First, he had to get out of here.

That meant taking the fuse out of the bomb. He went over to the cradle, examined the fuse. He tried to unscrew it. It was too tight. He looked around for a wrench. He saw none. He stood half panic-stricken. Could he afford a search

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for the wrench which would remove the fuse? If anyone came in, he was done for. No, he'd have to get out while he could.

And if anybody took a shot at him, and hit the bomb, it was good-by Cathor and all that's in it. But he didn't dare wait here. And he must stop sweating ice water, stop this trembling.

He picked up the cradle and walked carefully to the door. Outside, in the anteroom, the guards who had brought him here turned white. Blood drained out of their faces like air from a punctured balloon. They stood motionless, except for a slight trembling of their knees, and watched Ybor go out into the corridor.

Unmolested, Dr. Sitruc had said. He was not only unmolested, he was avoided. Word seemed to spread through the building like poison gas on a stiff breeze. Doors popped open, figures hurried out—and ran away from Ybor and his cargo. Guards, scientists, men in uniform, girls with pretty legs, bare-kneed boys—all ran.

To where? Ybor asked with his heart in his mouth. There was no safe place in all the world. Run how they might, as far as they could, and it would catch them if he fell or if the bomb were accidentally exploded.

He wanted a plane. But how to get one, if everybody ran? He could walk to the airport, if he knew where it was. Still, once he was away from these laboratories, any policeman, ignorant of the bomb, could stop him, confiscate the

weapon, and perhaps explode it.

He had to retain possession.

The problem was partly solved for him. As he emerged from the building, to see people scattering in all directions, a huge form came out from behind a pillar and took him by the arm. Sleyg Ybor almost cried with terror which became relief.

"Come," Sleyg said. "Ylas want you."

"Get me to a plane!" Ybor said. He thought he'd said it quietly, but Sleyg's yellow eyes flickered curiously at him.

The big man nodded, crooked a finger, and led the way. He didn't seem curious about the bomb. Ybor followed to where a small car was parked at the curb. They climbed in, and Sleyg pulled out into traffic.

So Ylas wanted him, eh? Why? He gave up speculation to watch the road ahead, cradling the bomb in his arms against rough spots.

He heard a plane, and searched for it anxiously. All he needed at this stage was a bombing raid, and a direct hit on this car. They had promised him that no raids would be attempted until they were certain of his success or failure, but brass hats were a funny lot. You never knew what they'd do next, like countermanding orders given only a few minutes before.

Still, no alarm sirens went off, so the plane must be Sixa. Ybor sighed with relief.

They drove on, and Ybor speculated on the huge, silent figure beside him. How had Sleyg known

that he would come out of that building? How had he known he was there? Did the Underground have a pipeline even into Dr. Sitruc's office?

These speculations were useless, too, and he shrugged them away as Sleyg drove out of the city through fields of grain. The Sixa, apparently, were going to feed their armies mush, for he saw no other produce.

Sleyg cut off the main road into a bumpy lane, and Ybor clasped the bomb firmly. "Take it easy," he warned.

Sleyg slowed obediently, and Ybor wondered again at the man's attitude. Ybor did not seem to be a prisoner, yet he was not in command here completely. It was a

sort of combination of the two, and it was uncomfortable.

They came to a bare, level stretch of land where a plane stood, props turning idly. Sleyg headed toward it. He brought the car to a halt, motioned Ybor out. He then indicated that Ybor should enter the big plane.

"Give me your tool kit," Ybor said, and the big man got it.

The plane bore Sixa insignia, but Ybor was committed now. If he used the bomb as a threat, he could make anybody do what he liked. Still, he felt a niggling worry.

Just before he stepped on the wing ramp, a shot came from the plane. Ybor ducked instinctively, but it was Sleyg who fell—with a neat hole between his eyes. Ybor

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tensed himself, stood still.

The fuselage door slid back, and a face looked out.

"Solraq!" Ybor cried. "I thought you were dead!"

"You were meant to think it, Ybor. Come on in."

"Wait till I get these tools." Ybor handed the cradle up to the dark man who grinned down at him. "Hold baby," Ybor said. "Don't drop him. If he cries, you'll never hear him."

He picked up the tool kit, climbed into the plane. Solraq waved a command to the pilot, and the plane took off. Ybor went to work gingerly on the fuse while Solraq talked.

"Sleyg was a cutie," he said. "We thought he was an ignorant ape. He was playing a big game, and was about ready to wind it up. But, when you named me for identification, he knew that he'd have to turn in his report, because we could have sent you directly to Dr. Sitruc, and helped you. Sleyg wasn't ready yet, so he reported me dead. Then he had the soldiers come and search the house, knowing you'd be found and arrested. He got into trouble when that skirt-chasing sergeant decided to take Ylas along. He had to report that to others of the Underground, because he had to have one more big meeting held before he could get his final dope."

"You see, he'd never turned in a report," Solraq went on. "He was watched, and afraid to take a chance. When Ylas and I got together, we compared notes, searched

his belongings, and found the evidence. Then we arranged this rendezvous—if you got away. She told Sleyg where you were, and to bring you here. I didn't think you'd get away, but she insisted you were too ingenious to get caught. Well, you did it, and that's all to the good. Not that it would have mattered much. If you'd failed, we'd have got hold of the bomb somehow, or exploded it in Dr. Sitruc's laboratory."

Ybor didn't bother to tell him that it didn't matter where the bomb was exploded. He was too busy trying to prevent it's exploding here. At last he had the fuse out. He motioned Solraq to open the bomb bay. When the folding doors dropped open, he let the fuse fall between them.

"Got it's teeth pulled," he said, "and we'll soon empty the thing."

He released the clamps and pulled the hemispheres apart. He took a chisel from the tool kit and punched a hole in each of the cadmium cans in succession, letting the powder drift out. It would fall, spread, and never be noticed by those who would now go on living.

They would live because the war would end before Dr. Sitruc could construct another bomb. Ybor lifted eyes that were moist.

"I guess that's it," he said. "Where are we going?"

"We'll parachute out and let this plane crash when we sight our ship some fifty miles at sea. We'll report for orders now. This mission's accomplished."

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